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TELEGRAPHIC ADDRESS—LANCET, WESTRAND LONDON TELEPHONE NUMBER—GERRARD 5356

No. XI. OF VOL. I., 1918.
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An Address
ON
THE SELECTION OF CANDIDATES FOR THE AIR SERVICE.

Delivered before the Medical Society of London on March 11th, 1918,

BY H. GRAEME ANDERSON, M.B., CH.B., F.R.C.S.ENG.,

TEMPORARY SURGEON, R.N., ATTACHED R.N. AIR SERVICE; SENIOR ASSISTANT SURGEON, ST. MARK'S HOSPITAL, CITY ROAD, E.C.; SENIOR ASSISTANT SURGEON, BELGRAVE HOSPITAL, CLAPHAM, S.W.

MR. PRESIDENT AND GENTLEMEN,—I am deeply conscious of the honour that has been done me in asking me to open this discussion to-night; more so as this is the first time that at any medical society in Britain the subject of aviation has been touched on from one of its many medical aspects.

THE DEVELOPMENT OF AVIATION.

I think that all will agree with me that one, if not the outstanding, feature of this present war has been the remarkable development of aviation. Scarcely ten years ago the pioneer aviators were looked upon as men possessing some supernatural quality—the power to fly. Then man began to teach man, and the institution of dual control instruction, in which teacher and pupil fly in the same aeroplane each with a set of controls acting in unison, paved the way for many to learn flying. The services, naval and military, organised flying corps and the possibilities of this new arm in warfare were seriously considered. On the outbreak of war the personnel of the Air Service was increased, and there was a great demand for pilots. As loss and wastage occurred this demand grew and methods of training in flying were intensified. Accompanying this have been the development in aeroplanes in speed, power, and construction, and the institution of long-distance flights, high altitudes, night flying, and specialisation in different forms of flying—e.g., aerial fighting, reconnaissance and photography, bombing, testing, and instructing.

THE AVIATOR'S DUTIES.

The subject I have chosen to-night is the selection of candidates for the Air Service, but to realise the value of the standards of fitness required it is well to know something of the aviator's duties in war-time. On the one hand, he has usually comfortable quarters, a good bed and food, and has not to undergo the long marches and discomfort of trench life as in the infantry work. He is usually out of range of enemy artillery fire, although subject to hostile aircraft attack. In weather unfit for flying he has much leisure time. On the other hand, in the few crowded hours of his daily work he may come through the most intense strain to which the human nervous system can be subjected. As it has been aptly put, an aviator's life consists of "long spells of idleness punctuated by moments of intense fear." He has to face extremes in the elements, intense cold, the sun's glare, rain, wind, fog and mist, and gusty or bumpy weather. There is the incessant noise of his engine; he may have long-distance patrols, in which the imagination is given free play to run riot, perhaps over the sea, with no land-marks and the dread of engine failure ever present in his mind. His visual acuity is sharpened, always on the look-out for hostile aircraft, watching for and registering the flash of enemy guns, taking photographs, noting movements of enemy troops, rolling stock, submarines, or other information of naval or military value, and subjected to more or less accurate anti-aircraft gun fire from the ground. Often he has to reach altitudes where the available oxygen is reduced by one-half. He may have suddenly and rapidly to change height, as in the modern aerial fight in which he may be opposing more than one enemy machine. His judgment has to be most accurate to perform the various intricate aerial evolutions so as to outwit his opponent and gain a favourable position to rake him with machine-gun fire He may have to loop, spin, dive, or side-slip, apparently out of control, in order to deceive his opponent or to decoy him over a friendly gun or near a friendly formation. There is the subconscious dread of his aeroplane catching fire in the air. Lastly, and most exciting of all, is the nerve-strain of contour chasing or ground strafing, in which he attacks the enemy on the ground from a low height of perhaps 20 to 50 feet.

PERSONAL EXPERIENCES.

I have touched lightly on the development of aviation and sketched briefly something of a pilot's duty in war-time. With regard to the views to be expressed on the standards of fitness for such work, these are not to be taken as representative of any particular service, but are mostly personal, gained from experience with the Royal Naval Air Service since the outbreak of the war. I have also been associated with aviators of our Royal Flying Corps and at times with French, Belgian, and American aviators. For the past three and a half years I have lived with aviators, flown with them, and entered for the most part into their interests, studying them alike in war squadrons, in aeroplane, seaplane, and airship stations, and in hospitals specially devoted to their maladies. I have made many friends amongst them, and I deeply regret the loss of many of the best friends a man could have. Let me pay here my tribute to our flying men: "That nothing is too good for them, and it is up to us as a profession to strive in every way we can to save them from disaster, and should disaster overtake them to find the means to restore them to health again."

BASIS OF PRESENT INVESTIGATION.

We can help in this matter by knowing the requirements of the aviator's life, by studying the psychology and physiology of flying, and by investigating the maladies commonly found amongst flying men. By such means standards of fitness can be drawn up subject to modification from time to time. In eliminating the unfit—and man-power is an ever-increasing problem—I would suggest the institution of a special flying school where border-line pupils could be instructed in flying under patient and sympathetic instructors and with a medical officer, specially interested in aviation, carefully recording the results. Such records would be invaluable to us in confirming or modifying the present standards of fitness required for air work. The modern aviator's work is becoming more and more specialised, and here again we can help by framing standards of fitness graded for the various flying duties.

PHYSICAL REQUIREMENTS.

In selecting candidates for the Air Service what is looked for is a sound constitution, free from organic disease, and a fairly strong physique in order to withstand altitude effects, such as cold, fatigue, and diminished oxygen. It is essential there should be normal hearing and good muscle and equilibration sense.

Eyesight.—As the aviator is so much dependent on his eyesight, too much importance cannot be laid on this part of the examination.

Temperament.—But next to vision, and most important of all in obtaining the best aviator, is the question of temperament. Undoubtedly there is a particular temperament or aptitude for flying, and its distribution is peculiarly interesting, whether looked upon from its racial aspect and ethnological origin or in relation to previous health, life, and habits. Unfortunately, this temperament is a difficult matter to estimate clinically, and especially so in the examining room. The ideal aviator must have good judgment, be courageous, and not upset by fear, although conscious of the perils of his work. He must be cool in emergencies, able to make careful and quick decisions and act accordingly. His reaction-times must never be delayed—he must be ever alert, as mental sluggishness in flying spells disaster. Whether he should be imaginative or not is a difficult question to settle—one meets many of both types. I am inclined to think the pilot with imagination, yet able to keep it well under control, makes the better pilot.

Previous training in sports.—With regard to relation of habits in this special aptitude for flying, the latter is found most commonly amongst those used to playing games and leading an outdoor life. The yachtsman and the horseman, with their finer sense of judgment and "lighter hands," should make the most skilful pilots. The Germans always selected their aviators from their cavalry until recently. It was thought that the racing motorists would make the best

pilots, but this has not always been proved to be so. Every now and then one meets the type with splendid physique and apparently unshakable courage who learns to fly indifferently or is unable to learn at all, and again one meets the weedy pale type learning quickly to fly and turning out to be a first-rate pilot.

Family and previous history.—In estimating whether the candidate is likely to stand the strain of war-time flying much help can be given by inquiring into his family history as well as the history of his previous health.

MEDICAL TESTS OF AVIATION CANDIDATES.

Candidates for the Air Service should be made to undergo (1) a surgical examination, (2) a medical examination, and (3) a special sense examination, preferably by experts in each line, and the final selection made on the total results by a medical selection committee.

I. SURGICAL EXAMINATION.

General.—In the surgical examination the age, height, weight, and general physique are considered.

Age.—The age should be between 18 and 30 years. Under 18 and up to 20 caution and well-balanced judgment may be lacking; 24 is about the best age. Over 33 the candidate, although quite able to learn to fly, does not stand the nerve-strain of air work so well. Much depends on the physiological age. Cody learnt flying at 47 and was flying regularly till he met his death when 52 years of age.

Height does not matter much, but the candidate should not be under 5 feet 2 inches, as he would have difficulty in reaching the rudder bar or looking over the cockpit of the aeroplane.

Weight.—Naturally the lighter the candidate the better, but in modern times with the increased speed and climb of aeroplanes this does not count so much as formerly. Colour, physique, attitude and tone of muscles should be noted, especially the abdominal muscles, where lack of tone would allow of splanchnic flooding and the possibility of fainting in the air. Any surgical defect, no matter how small, should be recorded in the report, as such may be used and its significance exaggerated later by a pilot who has developed a distaste for flying.

The Previous History of Wounds and Injuries.

These injuries have to be carefully considered—especially injury to the head, followed by prolonged unconsciousness of recent origin. I have known a few such and who were all slow to learn, made indifferent pilots, were easily fatigued, and quite unfit for war work in the air. These cases all had symptoms dating from their injury—e.g., headaches, easily fatigued, emotional and subject to vertigo, and physical signs, such as instability of muscle and equilibration sense. Should the head injury not be of recent origin, the candidate have no symptoms and able to pass the tests, he should be placed in the special school which I suggested. Any evidence of epilepsy, vertigo, migraine, persistent headaches, lack of concentration, and easily induced fatigue should disqualify. Loss of cranial vault need not disqualify. Recently I passed such a pilot as fit for flying. He was able to pass all the tests, and had quite a large piece missing from the frontal region of his skull. Trunk injuries may disqualify, depending upon the amount of disablement and deformity. I have had four cases of fracture of the spinal column without injury to the spinal cord. One has a marked kyphosis and is not allowed to fly. Two have been fitted with light pexuloid jackets which give considerable help. It has to be remembered that the pilot's seat unfortunately is not built for comfort. I have had no experience of cases of gunshot wounds of the thorax who have returned to flying duties, but these should not be rejected unless they fail to pass the altitude tests as devised by Major M. Flack, R.A.M.C.

Disabilities to Extremities.

With regard to whether disabilities of the extremities should cause rejection or not, their significance depends on the extent to which they interfere with the power to work the controls or use the machine gun. An aeroplane nacelle with the controls attached to a dynamometer registering the minimum force required to control and fly the machine can be used to estimate disabilities of the extremities.

With regard to the upper extremities, it is important to remember that most movements in controlling the aeroplane are performed below the level of the shoulder. Dr. Head recently asked me to see a case of a pilot with deficient lower trapezius muscle action on one side, so that he could not use the one arm above the level of the shoulder. It was pointed out that this pilot could quite well control the aeroplane, but would be prevented from freeing a jam in a gun mounted on the upper planes. It is much more important that the candidate should have both arms intact than both legs. Quite a few with one leg have still been able to fly, and should the amputation be below the knee an artificial lower leg and foot will act quite well on the rudder bar. Should the amputation be above the knee the artificial leg is dispensed with in flying and the normal foot is strapped to the rudder bar, the latter being pressed forward or drawn backward in the aeroplane's control by the sound leg.

Those with orthopædic disabilities, such as contractures, partial loss of power or limited movements in certain joints, should be tried in the examining nacelle. Those with limitation of movement in the ankle-joint should be passed for employment in seaplanes and other types requiring less delicate control than fast single-seaters. I have known a pupil with congenital dislocation of one hip who had no difficulty in learning to fly.

Old infantile paralysis cases should be rejected owing to the danger of trophic lesions being produced by the cold of altitudes. Candidates suffering from venereal disease must be temporarily rejected. To fly well one must be temperamentally as well as physically fit; and in venereal disease, with all its attendant worries, full attention and concentration on flying, so important in the tuition stages, cannot be given.

II. THE MEDICAL EXAMINATION.

Before proceeding with this examination a careful record is made of the candidate's (*a*) previous occupation, habits, and mode of life; (*b*) previous health; and (*c*) family history.

(*a*) *Previous Occupation, Habits, and Mode of Life.*

As a general rule those whose previous occupation has been of an out-door nature and those who have been accustomed to playing out-door games make the better aviators, although, as in most things, the exception to the rule is occasionally to be found in the thoughtful, quiet, student type who rarely plays any games yet surprises everyone by his rapidity in learning to fly and in developing light hands; and conversely we meet the type with fine physique, splendid courage, and in glowing health, who learns to fly with difficulty and develops hands like hams as far as piloting the aeroplane is concerned. It should be remembered that all aviation pupils are made to undergo physical training and are given opportunities to indulge in various out-door sports at most flying schools. Thus, many weedy and flabby individuals are soon licked into shape.

An inquiry is made into the candidate's habits, especially in relation to tobacco and alcohol, although very little real knowledge is gained in the examining room. Most flying men smoke a great deal and very few are strict teetotallers. Excess in smoking certainly leads to palpitation, shortness of breath, and in some cases double vision, and these dangers should be explained to candidates. Very few confess to excess in smoking and one records with a hidden smile the candidate's statement that he smokes five cigarettes a day whilst the sunburnt condition of the middle and index finger of his right hand bears silent testimony to a much greater daily expenditure in tobacco. Although I am not a teetotaller I firmly believe that to the aviator excess in alcohol will ultimately beat him. Amongst pupils at a flying school it should be strictly forbidden and candidates should be warned of its danger to flying. I have seen an aviator fly under the influence of alcohol and yet by instinct perform remarkable aerial stunts, although considering the age and type of machine his judgment in doing so was distinctly below par. In the air his passenger was decidedly sick over the side, but the pilot himself was not affected. Fortunately, nothing worse happened. But I know of another accomplished aviator who after a few drinks at a friendly aerodrome did a series of stunts and then made off home, a distance of 30 miles. He felt content but sleepy, made up his mind to do no more stunts in the air and remembered coming down to land on his own aerodrome. Later he woke up in the sick bay with a doctor stitching a scalp wound. Although he made up his mind to do no more stunts, onlookers saw him loop and roll the machine a number of times when coming down to land. There seems little doubt that the action of alcohol is accentuated in the air.

(*b*) *Previous Health.*

A great deal of help can be given from a careful inquiry into the candidate's previous health. Recent temporary illnesses such as influenza and tonsillitis may hinder a candidate from passing the tests, yet his rejection should only be temporary and a further re-examination should be

carried on later. A history of untreated or imperfectly treated syphilis should be a cause for rejection. A history of malaria with recent attacks should be a cause for rejection. In my experience malarial cases rarely do well in aviation and I have had to invalid out quite a few. The cold experienced in flying undoubtedly easily precipitates malarial attacks. If malarial cases are allowed to fly at all they should be made to do so in warm climates. A history of epilepsy or petit mal should disqualify a candidate. Elsewhere I have recorded the case of a pupil who was slow to learn and was on the point of being turned down on that account alone. He was given another chance under another instructor, who reported fairly satisfactory progress, but one day the pupil in one of his early solo flights failed to flatten out, the aeroplane hit the ground at its gliding angle, and he was thrown clear of the crash a distance of 66 feet and found quite unhurt, although a little dazed and mentally slow. A few days later in the mess this pupil was seized with a typical epileptic seizure, which was repeated the same night and the following day. A confession was then forthcoming that he had suffered from epilepsy for the previous five years and that he had taken bromides regularly. An epileptic seizure in the air was undoubtedly the cause of the crash.

Candidates with a history of neurasthenia, nervous breakdown, mental depression rarely do well in aviation. Similarly those with a history of shell shock soon develop some form of aero-neurosis. Such histories should be estimated from the standpoint of date, duration, original severity, and the lapse of time with freedom from symptoms. I have made careful inquiry into the value of a history of sea-sickness and train-sickness and would not reject a candidate on such grounds unless those for balloon work. Cases of real air-sickness—that is, sickness due to the rolling and pitching of the aeroplane—are comparatively rare. The actual vomiting usually occurs not during the flight, but immediately after the landing. Should a pupil be unduly liable to air-sickness it is usually discovered quite early in his training whilst under dual control instruction.

A history of recent tuberculosis of the lungs should cause rejection at once. I knew one pupil who escaped the usual entrance medical examination and who had active pulmonary tuberculosis. The cyanosis and respiratory distress he showed in his trial flight were really alarming. I took him aside and had a good heart-to-heart talk with him. He confessed to his disease, and said he knew he could not get into the Army, but he was keen on flying and, in his own words, "did not care a damn how he finished up." Examination revealed extensive and advanced tuberculosis of the lungs. I had him sent to the South of France. A history of asthma, chronic bronchitis, or pleurisy would cause rejection.

(c) *Family History.*

The family history, especially with regard to diseases of the nervous system, may shed some light on the type of soil with which we have to deal, especially in relation to the strain of war flying.

The Renal, Digestive, Circulatory, Respiratory, and Nervous Systems.

In the medical examination these systems are investigated.

(*a*) *Renal.*—The urine is examined for albumin and sugar, if present the candidate is rejected.

(*b*) *Digestive.*—In examining the digestive system, note is taken of the tone of the abdominal muscles. If the tone is poor and there is some dilatation of the stomach—danger signals that splanchnic flooding and fainting in the air may occur—these cases are sent back for physical training, and if passed for flying duties should be advised to wear an abdominal belt.

(*c*) *Circulatory.*—If any organic disease of the heart is found the candidate is rejected. Equally important is any evidence of instability of the vaso-motor system. Raynaud's disease would disqualify. Candidates showing coldness of the extremities, with signs of defective peripheral circulation, and a history of easily induced chilblains should not be allowed to fly at great heights but rather graded for low-flying duties. Among some aviators who break down and exhibit some type of aero-neurosis it is found that there are signs of vaso-motor instability—e.g., the radial pulse is not well sustained with the arm overhead, there is a large pulse pressure on examination with the sphygmomanometer, and there are signs of defective peripheral circulation in the extremities. Candidates showing such signs do not last long as aviators. Further investigation is required in such cases. I would not reject them altogether, but rather place them in the special flying school. Many of these cases may be due to recent temporary illness, and, again, many can be improved by physical training. Personally I do not attach much importance to the pulse-rate. With a large number of pupils I examined the pulse-rate before and after their trial flights. The majority showed a rate varying from 96 to 120 before the flight and with an increase of 10 to 20 beats after landing. It has been said that a slow pulse is a good sign, yet in a group of 15 pupils the one who showed a slow pulse-rate, 80 before the flight and 86 on landing, was the only one of that group to give up flying after his fourth solo. He developed all the signs of pupil's aero-neurosis.

(*d*) *Respiratory system.*—Any evidences of active tuberculosis, emphysema, bronchitis, or pleurisy disqualify for air work. In war-time an aviator may have to fly at any height up to about 22,000 feet; at this altitude the available oxygen is reduced by one-half, and consequently the respiratory rate is increased. Many aviators feel quite undisturbed at this height, some feel respiratory distress, fatigue, headache, faintness and blurring of vision, epistaxis, and have to descend, whilst some actually faint in the air. The problem why some are affected and some are not at great altitudes has been investigated by Major Flack. His work is of the greatest importance and its value cannot be overestimated with regard to safeguarding our airmen. Much of Major Flack's work cannot be referred to now, but mention can be made of one of his tests—namely, the breath-holding test. In this test the candidate, seated, is told to expire once as fully as possible, then to inspire fully and hold his breath as long as possible. I tell them to imagine they are swimming under water and to hold on as long as they would do there. A clip is placed on the nose. Most good pilots are able to hold the breath for 60 seconds or more—45 seconds is the minimum for the test. During the breath-holding there is a depletion of the alveolar oxygen and the candidate is submitted to a gradually rarefying atmosphere, as in ascending to a high altitude. This test has been confirmed to be of practical value by other more accurate tests in which the accumulation of CO_2 was eliminated, and, moreover, it has been found that pilots who suffer at altitudes cannot hold the breath so long as those who are unaffected. In the absence of organic disease it is difficult to account for this disability, and various theories have been suggested, such as a low vital capacity or an abnormal rate of oxygen usage, or an undue reaction to diminished oxygen. As some fail in the test through lack of resolution, it is important to ask the candidate his reason for giving up. The "oxygen want" cases may reply, "I felt dizzy," "My head began to swim," "Things got blurred"; whilst the normal cases usually say, "I wanted air," "I just had to give in," "I felt like bursting." It is useful also to measure and record the candidate's respiratory capacity. The candidate should show 3000 c.c. or more.

(*e*) *Nervous system.*—Any organic disease of brain or spinal cord disqualifies a candidate. The mentality and temperament have to be studied as carefully as possible. Knee-jerks are recorded. An exaggerated knee-jerk may indicate an unstable nervous system. The candidate is tested for tremor by making him stand with the eyes shut, tongue out, arms extended, and fingers slightly flexed and spread apart. An inquiry is made into the usual amount of sleep obtained, and whether disturbed or not. Any signs of restlessness are noted, such as fidgety movements of hands, feet, or face, or biting the nails. These would rather point to an unstable nervous system. Yet I have in mind one aviator recognised as one of the very best instructors in our service, who exhibits, when not flying, all forms of restlessness, so marked that it amounts to a destructive habit. Unconsciously he will destroy many articles within his reach; at night he can often be heard talking away in his sleep for quite long periods.

III. SPECIAL SENSE EXAMINATION.

(*A*) *Vision.*

I have no doubt in my own mind that the aviator should have unaided normal vision in both eyes and in each eye separately, and also normal colour vision. Such is required of an executive officer in the Royal Navy, and such should be the standard for air work. The medical aviation authorities of the French Army and of the American Navy insist on this. I know perfectly well that there are quite a number of aviators with defective vision who fly well, yet I know also of many who have come to grief. The pupil with defective vision who attempts to learn flying will probably crash. I would qualify this by saying that should such a pupil have been an observer for some time he will probably learn to fly quite well, his visual judgment having been adapted by his previous air experience. An aviator with defective vision is undoubtedly at a disadvantage in an aerial fight or in reconnaissance work.

I feel sure I have saved some pupils from disaster by advising them to give up flying on account of their eyesight. Every now and then, in aerodrome life, one runs across incidents that forcibly demonstrate the value of good vision to the pilot. Last summer I recall a pupil with defective vision, but corrected by glasses, who was making bad landings. He was on the point of being turned down, but was allowed another chance. He made three attempts to land—in the first two he flattened out too soon and went up again, and on the third attempt he made a good landing. Yet that same evening he met his death in a crash. From the inquiry I have no doubt his glasses got displaced by his safety helmet, and his uncorrected defective vision was insufficient to save him.

Later to the same school came two pupils, each with defective vision, one corrected and the other not, yet both learned to fly without trouble and became good pilots, but each had over 100 hours to his credit as an aerial observer.

In view of the question of man-power in the supply of candidates for the Air Service, the standard of vision may have to be lowered, although personally I am strongly against this, or at least it may be possible to have vision standards graded for the various flying duties. Candidates should be examined for concealed hypermetropia which has been found in some cases to be a cause of making bad landings. Should a candidate with each eye read 6/9 with a + 2 lens he is rejected. Similarly, heterophoria, or concealed squint, has been found to be a cause of making bad landings. Such cases are better tested and watched by the aerodrome doctor. The test applied is the red and green light test.

Pilots and observers should have perfect colour vision. The importance of this is seen in picking out the colour or markings of hostile machines, in recognising signal lights, and in judging the nature of landing grounds.

Testing for night-blindness is only of importance in grading pilots for night bombing. It must be remembered that there may be a certain amount of adaptation to light perception, and, again, that the ideal conditions for night flying are bright moonlight and no clouds. Under these conditions it is almost impossible to spot an aeroplane from the ground. Thus the pilot can see well, but not be seen. Night-blindness is tested by reading the ordinary test-type under gradual increase or decrease of illumination. It is hardly necessary to test for stereoscopic vision.

(*B*) *Aural.*

This includes examination of the throat, nose, and ear. The previous history is noted with regard to pyorrhœa, recurring sore-throat, earache, deafness, or discharge from the ears. The teeth and gums are examined, as it is essential that the pupils should commence flying dentally clean. Most aviators fly with the mouth slightly open and any minor degree of oral sepsis flares up owing to the cold or rush of air experienced in flying. In one pupil with pyorrhœa I have seen a very severe gingivitis induced through flying. In propeller types of aeroplanes—i.e., with the engine behind—there is little protection from the rush of air. Septic tonsils should be enucleated.

The nose is examined to estimate the amount of clear airway. The Italians lay stress on this examination and even take tracings of the degree of nasal stenosis by means of a nasal catheter, plug, and recording manometer. Many pilots with septal deviation and enlarged turbinates have flown without discomfort, whilst others have been returned suffering from headaches induced in the air. Some have had submucous resection performed in the hospital lately and have been returned to flying duties. Reports from them later will help to settle the relationship between nasal obstruction and headaches induced by flying. Further observation on a series of cases is required. Cases with adenoids, and nasal polypi or infective sinuses, are temporarily rejected until treatment has been carried out.

Hearing must be normal and each ear is tested separately by forced whisper at a distance of 20 feet. I use terms employed in aviation such as "contact" and "switch off." The aviator's hearing becomes tuned to the sound of his engine and any misfiring is at once detected and action taken accordingly. Defective hearing in the pilot or air mechanic may lead to serious injury or even death to the latter, as in starting up the engine preparatory to a flight. In this act the mechanic swings the propeller and should the aviator, through defective hearing, fail to catch the words "contact" or "switch off," as the case may be, the propeller may backfire and injure or kill the mechanic. Chronic suppurative disease of the middle ear is a cause for rejection. Similarly I would reject any cases showing perforation of the tympanic membrane or cicatrices. These cases would probably suffer from pain in the ears induced by the incessant noise of the engine and by pressure effects from changing height rapidly. There is also the possibility of permanent deafness ensuing later.

(*C*) *Equilibration and Muscle Sense.*

It has been assumed that a sound equilibration and muscle sense is essential in flying, so that the aviator would be conscious of his position in space, realise at once any deviations therefrom, and correct these quickly. But in fog it has been found almost impossible to detect any deviation during a flight. Time and again aviators coming out of dark clouds or fog have found themselves flying one wing down, and it has been recorded that some have flown upside down without knowing it. Thus it is obvious that most of the impressions whioh control balance in flying come through the eyes.

To investigate this I did the following experiment with Flight-Commander McMinnies, R.N., as pilot, my sense of balance and vestibular reactions having previously been found normal by Mr. G. J. Jenkins:—

Blindfolded and with ears plugged I sat in the stern seat of an aeroplane in telephonic communication with the pilot in front. The latter had to perform certain evolutions in the air, and these and my position in space I had to describe to him during the flight. At first I was able to describe the flight fairly accurately—the climbing, flying with right wing down, the first spiral downwards to the right; after that I was "all at sea," and thought we were climbing up and up continuously, whilst in reality we were spiralling down to the left. I was able to record the latter part of the descent to land.

I think this experiment goes far to prove that the aviator is for the most part dependent on impressions conveyed through the eyes for his sense of balance during a flight. Nevertheless, although further investigation is required in this direction, I think that every candidate's equilibration, muscle sense, and vestibular reactions should be tested.

The following are the tests generally employed:—

(*a*) Self-balancing at rest and in motion. The candidate with his eyes shut and hands on his hips is asked to stand on one leg. He should do this for 15 seconds on each leg. He then walks in a straight line heel to toe, but with eyes open, and at a given signal he has to pivot round and walk in the opposite direction without losing balance.

(*b*) The muscle sense can be tested in two ways—firstly, by asking the candidate to appreciate difference in weight between articles of a similar size; and secondly, by making him raise a cigar-box lid on which is balanced a tuning-fork, five inches in height and with a small foot-piece, from a table to the level of the shoulder and down again. Those with a good muscle sense can do this without upsetting the tuning-fork. Many can raise the apparatus successfully but in lowering it fail, indicating carelessness and an impulsive nature. It may be pointed out that the muscle sense is called into play quite a lot in flying—especially impressions from the buttocks. In running into air-pockets the aeroplane may be suddenly bumped upwards or downwards as a whole, or rocked in a lateral or fore-and-aft direction. These deviations are often felt in the buttocks, and with a quick reaction time in the pilot the aeroplane is soon on a level keel. In fact, an accomplished aviator seems to anticipate bumps.

(*c*) The vestibular reaction is tested either by means of the rotation test or the caloric test.

In the *rotation test* the candidate sits in a revolving chair fitted with arm-rests, foot-rest, and a head-rest inclined forward at 30°. He is told to close his eyes and the chair is then rotated evenly from right to left six times, each rotation lasting two seconds. The eyes are then opened at a given signal and the candidate looks to his left at the examiner's right forefinger. The nystagmus so induced is noted with regard to its duration, degree, and type. The test is then repeated in the opposite direction. The duration of the nystagmus in normal cases varies from 12 to 25 seconds, anything over 25 indicates an easily stimulated vestibular mechanism. With regard to the degree of nystagmus, the majority show fine rapid oscillations, but some show large and slow oscillations, whilst some exhibit a mixed form. The type of nystagmus is almost invariably in a lateral direction, but I have seen vertical nystagmus with a curious rotation of the eyeball. Mr. Jenkins has pointed out that in those with a highly trained vestibular mechanism, like the acrobat, the nystagmus induced is of short duration or absent. At present it is difficult to interpret the readings and investigation is

required to find whether the individual with a highly trained vestibular mechanism or the opposite makes the better aviator. It is essential to have a rotation chair worked electrically, as an uneven rate of rotation alters the findings considerably. I have treated by rotation over a hundred pupils and skilled pilots but cannot come to any definite conclusion with regard to the value of duration or degree of nystagmus, except that perhaps, if any, the most experienced give a shorter duration. Curiously enough the one pupil who exhibited slow vertical nystagmus with some rotation soon developed aero-neurosis and gave up flying.

In the *caloric test* the nystagmus is induced by a gentle continuous flow of water at 70° F. into one ear. The period of induction and the duration of nystagmus are recorded.

It has been suggested that the sense of *projection* should be tested. In this test the candidate looks fixedly at the bull's-eye of an indoor-range target until he locates its position in space. He then closes his eyes and attempts to place the forefinger of his right hand on the bull's-eye. The readings are noted down as bull, inner, outer, or miss—good pilots are supposed to score bulls or inners. I have tried this test with a number of aviators, but so far cannot estimate its full value.

I have made an attempt to test the aviator's sense of *direction*. In this test the instructor takes the pupil for a flight, spirals him twice, and then through the telephone asks him to point out a certain landmark on the aerodrome—e.g., a particular hangar. By means of a stop-watch the instructor notes the time taken to accurately point out the object. With the few tests that Flight-Commander McMinnies carried out for me the time taken by the pupil was about 4 seconds.

(*D*) *The Psycho-Motive Reactions.*

It is important that the aviator should possess normal reaction times with regard to vision, hearing, and touch. All parts of the reflex arcs involved must be intact. These reaction-times are tested by means of the D'Arsonval chronometer, which determines accurately at what fraction of a second, after having received a visual, auditory, or tactile stimulus, the candidate under examination reacts. By means of this instrument Dr. Camus, Dr. Nepper, and Dr. Binet have investigated the reaction times amongst aviators. In early 1917 I had the pleasure of visiting our French colleagues at the Grand Palais in Paris, and I was given every opportunity to witness and study their tests, with the value of which I was considerably impressed. The D'Arsonval chronometer is worked electrically, and has a clockwork movement turning a pointer on a dial, divided into 100 parts, at a speed of one revolution a second. There are two press button switches, one held by the examiner and one by the candidate.

To measure the visual reaction-time the examiner starts the pointer revolving by pressing his thumb-switch, and once the candidate perceives the pointer moving he stops it by pressing his thumb-switch. The time taken is noted on the dial. The normal vision reaction-time is 19/100 of a second, but in unsuitable candidates may be slowed down from 22/100 to 48/100 of a second. The visual reflex consists of the impressions carried through the eyes to the brain and from there down to the muscles controlling hands and feet. For example, the aviator perceives one wing tilted up to the right, and this impression is carried through his eyes to the brain, there recorded, and a decision made, which is transmitted to the hands, so that the control lever is pushed over to the right and the aeroplane is made to assume an even keel again. Or, as in landing, when the impression that he is near enough to the ground is transmitted through the eyes to the brain and down to his hands, he pulls back the control lever at the correct moment and the aeroplane flattens out just as the ground is reached. Should the visual reaction-time be delayed in landing, a crash is almost likely to ensue.

The auditory reaction-time is tested by the examiner tapping the table with his thumb-switch, which again causes the pointer to move, whilst the candidate facing away from the instrument, stops the pointer with his thumb-switch on hearing the tap. The auditory reaction-time usually takes 14/100 of a second, but may be delayed from 17/100 to 33/100. In the auditory reflex the impressions are carried through the ear to the brain and down to the muscles of control. For example, in flying the pilot may hear his engine miss fire and the decision to find a good landing place is at once transmitted to the muscles controlling eyes, feet, and hands.

The tactile reaction-time is recorded in a similar way, the examiner tapping the candidate on the head or hand, and the latter on feeling this stops the pointer. The normal tactile reaction-time is 14/100 of a second but may be slowed from 20/100 to 39/100. The tactile reflex consists of impressions conveyed from the nerve endings in skin and muscles to the brain and down to the muscles of control. For example, when a pilot feels a "bump" the sensation is carried from the skin and muscles of his buttocks to the brain, and a decision is transmitted to the muscles controlling his feet and hands to correct the effects of the bump. Each reaction-time is tested ten times and an average taken. All these reaction-times are found delayed if the candidate be physically or temperamentally unfit, as in disease, worry, cold, fatigue, and after excesses.

A slow reaction-time, the delay of a second or part of a second in correcting an error in the air or in landing may mean all the difference between a crash and safety.

In 1915 I devised the following test, but so far have not had the means of carrying it out. The idea was to measure the candidate's reaction-time in correcting "bumps." Use was to be made of a rocking fuselage fitted with controls and an electrical recording apparatus. In this the candidate was to sit ready as for flying. The examiner was to tilt the fuselage either laterally, or fore and aft, and the pupil had to correct this, and the time taken was to be recorded electrically.

This, from the point of view of practical aviation, would be another method of testing the candidate's tactile reaction time.

(*E*) *The Emotional Reactions.*

In this test, which has been elaborated by Dr. Nepper, the influence of the emotions on the respiratory rhythm, the vaso-motor control, and tremor is recorded graphically. It is more a grading test in determining the best type of aviator for aerial fighting rather than an entrance test for aviation candidates.

The aviator has round his chest a pneumograph, in his left hand a trembler, and round two fingers of his right hand a pneumatic "doigtier." All three are connected by rubber tubes to stylets writing on a blackened revolving cylinder, and thus are recorded the respiratory rhythm, any tremor present, and the peripheral vaso-motor control. Behind the candidate a revolver shot is fired or a magnesium flare set off, and on the smoked paper a record is made of any variations. In the best type of pilot with good nerves the effects recorded are of short duration, whilst in unsuitable ones the respiratory rhythm remains increased for some time, there is marked tremor, and peripheral vaso-motor constriction. I saw the graphic records of some of the best French aviators who fulfilled this test.

I trust I have in some little way helped you to realise the value of the medical selection of candidates for the Air Service. Much remains yet to be done, and there are many problems awaiting elucidation.

In conclusion, I would earnestly ask you to help to make practical the tribute I paid to our airmen in the early part of this address.

TRENCH FEVER.

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A Report to the Medical Research Committee.

CASES of relapsing pyrexia among our troops in France and Flanders were noted by Hunt and Rankin in the autumn of 1915.[1] They called them "Trench Fever." Since then many observations have been made upon febrile diseases of various types under the heading of "Trench Fever." They have been noted among the troops in England,[2] Salonica,[3] Mesopotamia,[4] and similar cases under another name have been described by Austrian observers on the Polish front.[5 6]

Hunt and Rankin's[7] series consisted of 30 cases with relapses; but they add that they saw many other similar cases of pyrexia in which no relapse occurred. Robinson,[7] writing later to THE LANCET, considers that some of these cases were paratyphoid fever, although they gave negative bacteriological findings.

McNee, Renshaw, and Brunt,[8] in their often-quoted contribution to the literature of trench fever, make a distinction between two types of case—the first, their Type A, characterised by short fever of about a week's duration, followed sometimes after a few days by a single relapse; and, secondly Type B, a longer illness characterised by the number, sharpness, and periodicity of the relapses.

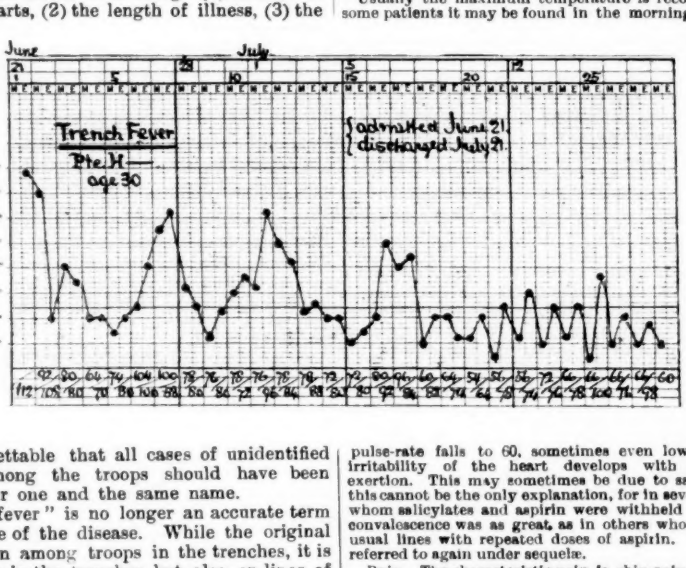
Weiner,[5] on the Russian front, described 34 cases of five-day relapsing fever with shin-pains; and Grätzer,[6] writing

from Vienna, gives an account of 200 cases characterised by severe shin-pains ("gaiter-pains"), where the temperature did not fall to normal for about a week. At the end of varying periods of a month to six weeks the patients suffered from a relapse. The former observer seems to have been dealing with cases of true trench fever, but the latter type of case described by Grätzer may possibly have been relapsing fever or even paratyphoid, since splenic enlargement was a constant feature of the condition.

Strethill Wright,[9] in a paper published in July, 1916, recognised both the types of fever found by the Austro-German observers; but did not observe any of the "Type A" cases which McNee had described. Hughes,[10] in September of that year, noticed three forms of "trench pyrexia," only one of which has features in common with the condition which we shall describe. His cases that correspond most closely to "Type A" appear to have been due to constipation.

Hurst[3] describes trench fever of Types A and B, and infers that the long illness with the sharp rises of temperature and the periodic relapses was the common variety of the disease in Salonica. Muir,[11] however, writing of cases seen in France, says he has seen very many short-type fevers, but none of the long type. Coombs[4] notes three cases of the long type in Mesopotamia, but does not say if the patients had recently come from Europe. Ramsay[2] describes a series of cases occurring in England which correspond to neither of these accepted types.

On consulting the bibliography quoted above, it will be found that the various observers have described at least two different types of pyrexia, to which the name of trench fever has been given, the main distinctions being: (1) differences in the temperature charts, (2) the length of illness, (3) the nature of the pains, (4) the character of the convalescence, and (5) the presence or absence of sequelæ.



There is much in favour of the hypothesis that these two diseases are similar in name alone, and we are of opinion that the label "trench fever" should be reserved for the *long* type of case, which presents such definite and constant features at its onset, in its course, and in its convalescence. It is regrettable that all cases of unidentified pyrexia occurring among the troops should have been grouped together under one and the same name.

Of course, "trench fever" is no longer an accurate term even for the long type of the disease. While the original cases seem to have been among troops in the trenches, it is now prevalent not only in the trenches but also on lines of communication and at the bases. Hospital orderlies and sisters are occasional victims.

Many, if not all, of the cases grouped first by McNee as "Type A," or the short variety of trench fever, may well have been manifestations of some other conditions:—E.g., constipation (*vide* Hughes[10]), a mild paratyphoid infection in an inoculated person (*vide* Robinson[7]), an infection with the enterococcus (*vide* Houston and McCloy[12] and Darling and Wilson[13]), abortive and atypical cerebro-spinal meningitis, or dysentery (*vide* Hughes[10]). Negative bacteriological and serological examinations, especially in the early stages of paratyphoid and dysentery, are recognised as of little value,[14 15] and with regard to the diagnosis of atypical cerebro-spinal meningitis it was once remarked by a high authority that during the winter months every ward in every hospital in France harboured an undiagnosed case of this disease; no doubt this statement was an intentional exaggeration, but it serves to indicate the difficulty which the most expert physician may have in recognising such aberrant cases.

We consider therefore that the term "trench fever" should be limited to the definite clinical entity which we shall now proceed to discuss; and that it should not be extended to cover all and any atypical pyrexial conditions, for which the name "P.U.O." (pyrexia of unknown origin) can be used so suitably.

Clinical Aspects.

The disease is common at all military ages.

Mode of onset.—This is sudden: a man in apparently good health in the morning may be quite unfit for any duty by nightfall. Rarely a prodromal malaise for a period of 24-48 hours is admitted on close questioning, but in the great majority of cases no such history is forthcoming. Initial rigor is uncommon. It is the exception for catarrhal symptoms to precede the onset; when they are present the likelihood of subsequent events supporting the provisional diagnosis of "trench fever" is very small.

Three types of onset can be recognised:—

1. General, with prostration, pains all over, temperature rising to 103° and 104°.
2. Abdominal, with vomiting and diarrhœa lasting for two or three days.
3. Cerebro-spinal, with sudden intense headache, usually occipital, some vomiting, stiffness of neck with pain on movement, great irritability, mental and physical, and exaggeration of reflexes. This type forms roughly 1 per cent. of the cases.

The tripod upon which diagnosis rests consists of (1) Peculiar temperature course, (2) slow pulse, (3) pain.

Temperature.—This rises rapidly to 103° or 104° F., frequently higher; on the second day it is lower and by the morning of the third day may be normal. Thereafter the temperature, as recorded on a chart, presents a very striking appearance. The record consists of a series of steep peaks, the summits of which occur at five-day intervals and the bases of which extend over a period of three days. (*Vide* chart.) The appearance is so striking that the name "five-day fever" has been given to the disease by some observers. This name is not suitable, for though the peaks most often occur at five day intervals such spacing is not constant. In some cases throughout there is a variation of one day, and in most cases the later peaks tend to become more irregularly spaced. In the non-febrile periods the temperature is always subnormal, and after the periods of definite pyrexia have ceased the temperature may remain unstable for several weeks.

Usually the maximum temperature is recorded in the evening; in some patients it may be found in the morning throughout the course of the disease. Careless or irregular recording of the temperature especially in the later stages of the disease, may therefore fail to reveal its true nature. A few hours before the temperature rises the patient becomes aware that something is amiss by the increase of headache and a feeling of general discomfort.

The pulse.—During the first few days the pulse-rate is increased in proportion to the rise of temperature. At the time of the first relapse it becomes relatively slow. It is no unusual thing to find a pulse of 90, with a temperature of 104°. Often, and especially in the apyrexial intervals, the pulse-rate falls to 60, sometimes even lower. In the late stages irritability of the heart develops with great quickening after exertion. This may sometimes be due to salicylate medication, but this cannot be the only explanation, for in several of our own cases from whom salicylates and aspirin were withheld the cardiac irritability of convalescence was as great as in others who had been treated on the usual lines with repeated doses of aspirin. This cardiac disorder is referred to again under sequelæ.

Pain.—The characteristic pain is shin-pain; so striking is this that the name "shin fever" has been sometimes used in reference to this disease. It is important to realise that the true shin-pain does not commence with the first pyrexial period. It occurs often with the second, and always during the third. In the apyrexial intervals it becomes much less and may even disappear till the next rise of temperature.

The pains of trench fever are of two kinds: (1) The headache and general limb and body pains familiar in the case of influenza; these occur at the onset; and (2) the typical pains which are now being described and are characteristic of the disease. They are situated, in order of frequency, in the shins, the loins, the back of the neck, the forearms, and the scapular spines. They are intense, always worse at night, and are often associated with great superficial tenderness, so that the pressure of the bedclothes is unbearable. The flexor surfaces of trunk and limbs are not affected. In a typical case the pain and tenderness are sharply demarcated by lines drawn above the bony points of the knee-joint and at the ankle-joint. Pain and tenderness in the thigh muscles and fascia lata are common; the feet escape. In the arms pain is felt along the dorsal border of the ulna and about the bony points of the elbow; it is rare in the upper arm. On examination no thickening or nodules can be found. The skin shows neither œdema nor local redness. As a great rarity a petechial rash may occur on the legs, recalling the petechiæ sometimes seen in tabes after a severe bout of "lightning-pains." These pains have a great tendency to persist in milder form during convalescence and are aggravated by damp weather.

Facies.—These patients present a tired, worn-out look which to the experienced eye suggests the diagnosis. It is probably to be explained by loss of sleep consequent upon the severe pain; it is associated with a degree of mental depression not entirely attributable to pain, and the disappearance of which is one of the most hopeful signs of commencing convalescence.

Alimentary system.—At the beginning of the illness the tongue appears swollen and thickly coated with a yellowish slimy fur. The surface becomes clean during defervescence without any characteristic sequence as is to be seen in typhoid infections; with recurring pyrexia fur may again appear. We have not been able to satisfy ourselves that there is a typical trench fever tongue as described by Grieveson.[16]

Diarrhœa and vomiting occur during the first 48 hours in many cases; they are rare later. None of our patients have passed blood and mucus, as did those of Hughes's Type C.[10]

Splenic enlargement, in our experience, does not often occur. Some tenderness in both hypochondriac regions is an occasional complaint during the first ten days; it is not present later.

Circulatory system.—*The blood* shows a small increase in basophiles and moderate increase in large mononuclear cells. Both these conditions are common among patients suffering from other diseases. Otherwise no notable changes in the blood are found.

The heart.—*Pericarditis* and *endocarditis* are unknown during the course or as sequels of the disease. Trench fever does appear to have an effect upon the heart muscle, however, whether directly or through nervous influences is not yet known. The slowing of the pulse early in the disease, at the time when pains are most severe, suggests the possibility of a local involvement of the myocardium. The subsequent excitability and occasional irregularity of the heart's action may be nervous in origin, but the persistence of the late tachycardia in some cases suggests that here also some myocardial damage has been done.

Respiratory system.—As has been said, catarrhal symptoms are very rare. A mild degree of bronchitis is almost universal among troops during the winter months, and trench fever patients are not exempt. During the summer, bronchitis among these patients has been very rare. Some degree of breathlessness on exertion is usual during convalescence. Sore throat, without obvious lesion, is only occasional.

Nervous system.—A few patients show at the beginning of the illness all the signs of meningeal irritation, intense headache, usually occipital, some photophobia, stiffness of neck and limbs, increase of tendon reflexes, vomiting and restlessness. Lumbar puncture under local anæsthesia yields a clear fluid under moderately increased pressure; in one case there was a slight mononuclear cell increase, but not beyond possible physiological limits. Lumbar puncture was not performed in all cases presenting meningeal symptoms; in those which were so treated relief was obtained, but in all the condition rapidly improved and did not recur with subsequent rise of temperature.

Urine.—The urine presents the characters usually associated with a febrile disease in the early stages. It is scanty, high-coloured, concentrated, and may cause scalding on micturition. In the first few days albumin, renal cells, and a few blood cells are very often present and the suspicion of nephritis may be aroused. This diagnosis is negatived by the absence of the other nephritis symptoms and by the rapid disappearance of the abnormal constituents. It is by no means uncommon to find that the provisional diagnosis of "albuminuria" or "nephritis," formed at the first investigation, has to be altered subsequently to "trench fever." (Contrast Chandler.[17])

The skin.—Sweating is common, sometimes profuse. Salicylates may be the cause of this in certain cases, but cannot be the sole cause, for in many of our patients who had received no salicylate sweating was a striking feature.

Rashes are uncommon. Occasionally a transient sudamina or urticaria may appear during the course of the disease. Nothing even remotely resembling "typhoid spots" has been seen in any of our cases, and we have not ourselves seen the rare petechial rash on the legs that has been noted by other observers.

Duration of disease.—It is usual for five or six pyrexial periods to occur; after the second or third they tend to become less severe and their spacing to become less regular. Some instability of temperature may persist for several weeks after the obvious pyrexia has ceased. The maximum severity of the shin-pains lasts for about ten days; after that they become less severe, less lasting, and less frequent. It is the exception for complete recovery to occur in less than six weeks of the onset.

Sequelæ.—The important sequelæ are persistent pains, worse in damp weather, and "D.A.H."—a convenient but unfortunate term meaning disordered action of the heart—convenient because to the initiated it is a useful label which implies nothing, and unfortunate because to the uninitiated it apparently means a great deal. During the course of the disease a relatively or absolutely slow pulse is the rule; during convalescence a rhythmic irregularity, probably of the sinus variety, is common, and when the patient begins to get about in the open air and take exercise his pulse-rate is very easily quickened.

Complaint of "palpitation" is common; "pain round the heart" is often alleged. True superficial tenderness of the præcordial skin is, in our experience, a rarity. It is important to recognise that this undisciplined action of the heart is not usually of serious import. The treatment for it is graduated exercise, not absolute rest; fresh air, good food, and enough occupation to ensure the sleep of the "pleasantly tired" should be the line of treatment, not, as is sometimes the case, indiscriminate drugging with digitalis and bromides.

Treatment.

It may be said at once that this is eminently unsatisfactory.

No drug has yet been found which will cut short the disease, and symptomatic treatment is hardly less unsuccessful, being limited to the use of local anodynes, and analgesics internally. Sodium salicylate is of no value whatever; aspirin in 10-grain powders at night gives some relief; a combination of aspirin and phenacetin sometimes acts better than either drug alone. Bromides, butyl chloral, and tincture of gelsemium have all been tried, and in our hands, at any rate, have had no success. Urotropine finds favour with some, but we have tried it in vain.

As local anodynes we have tried cold compresses with some success. Hurst strongly recommends compresses soaked in a saturated solution of magnesium sulphate, but in our opinion cold water is equally efficacious in some cases and equally inefficacious in others. Hot applications are usually badly borne, but we have seen relief follow the use of hot stupes sprinkled with m xx. of tr. belladonnæ. During the less acute stages rubbing the shins with any simple ointment containing menthol gr. xv. to the ounce has sometimes given relief. Arsenic is useless in the early stages, helpful in the late.

So far as we know, no opportunity for post-mortem examination of cases of trench fever has arisen. Investigations have had to be confined to blood, periosteum, and the excretions. From these no indisputable facts have yet been forthcoming. We can say, however, that the disease is infectious; that it has the characters of a general infection, but does not involve the lungs or endocardium; that it is never fatal; and that, though it tends to slow, but spontaneous, cure, recurrences after weeks or months are not uncommon.

Etiology.

Much work has been done by many bacteriologists and protozoologists in the hope of finding the causative organism of this disease since first trench fever was considered to be a clinical entity.

McNee, Renshaw, and Brunt[8] hold that the organism is not a filter-passer and that it is an intracorpuscular parasite. Their work has not been confirmed, nor has an intracorpuscular parasite been demonstrated in blood films, although hundreds of watchful eyes have been searching films for the past two years. Hort,[18] criticising the work of the above writers, does not think they have definitely proved that the causative agent is not a filter-passer.

Chandler,[17] discussing some cases of his own, thinks they may be influenzal in origin; and Dyke[19] is of the same opinion. Houston and McCloy[12] describe the presence of the enterococcus in the blood of several cases of pyrexia, including three cases of the type of trench fever which we are now describing. Our own cultures from the blood of true trench fever patients never showed the presence of the enterococcus.

Reimer[20] quotes Korbsch, who describes rapidly motile threads in the blood of trench fever patients; and he quotes also Werner, who claims to have found a spirochæte. Reimer himself states that he has cultured a spirochæte from trench fever blood. These results have not yet been confirmed. We have adopted Reimer's technique and cultured many specimens of the blood of trench fever patients aerobically and anaerobically in various media, without, however, finding any spirochætes.

Werner[21] considers the disease to be an aberrant form of relapsing fever, although he has not been able to demonstrate the presence of *S. obermeieri*. We[22] have described a spirochæte in the urine of trench fever patients, especially to be found there about the sixteenth day of illness; and Patterson[23] and Stoddard[24] have also written of spirochætes in the urine, not only of trench fever, but of other conditions. McCrea and Dickson[25] note that "a certain number of writers have discovered a spirochæte in the blood," but they do not give their references. Of 63 late cases examined by them the "vast majority" gave Wassermann reactions, although only four of them had suffered from syphilis. We cannot find that this observation has been confirmed or refuted by other writers. Lyn Dimond[26] described a "hæmogregarine" in the venous blood, lung, spleen, and liver of trench fever patients; his observation has not been accepted.[33] Pappenheimer and Vermilye[27] described protozoon-like bodies in some blood films and in sections of periosteum, but were afterwards convinced that these were artefacts.

With such conflicting evidence as that given above it may be said with certainty that the causative organism of trench fever has not yet been discovered. The spirochætal origin of the disease seems to be the hypothesis most in favour; and, if this be the correct one, it is not altogether surprising that the spirochæte remains non-isolated, when we consider the difficulty of demonstrating the presence of *T. pallidum* in the blood-stream in cases of syphilis, or of finding the *S. icterohæmorrhagica* in the blood of Weil's disease unless recourse be had to inoculation experiments. With regard to such experiments, in the case of trench fever they have been universally negative, with the exception of McNee's group of cases.

Transmission.

Although the causative organism of trench fever has so far escaped detection, much work has been done in attempting to elucidate the manner in which the disease is spread from person to person. Opinions agree in concluding that the disease is infective, but whether by direct personal contact or by means of some blood-sucking arthropod is as yet a matter that has not been decided.

Writing on field voles, Rutherford [28] suggests that field mice may be able to carry the infection, and states that these animals are infested with ticks. McNee, Renshaw, and Brunt thought that the disease might be carried by one of the common flies or parasites found in the trenches. The agency of the body-louse (*P. humanus*) in carrying this disease has been mentioned by many writers. There is both positive and negative evidence in regard to this. In our own experience a hospital sister on one occasion became verminous, and 14 days later developed typical trench fever. A senior N.C.O. who had to deal with patients' kits on their admission to hospital, but who otherwise did not come into contact with patients at all, developed a severe attack. Wright [9] believes that the disease may be louse-borne. Hughes [10] considers that there is strong presumptive evidence that this is a disease carried by lice. Grieveson,[16] who himself suffered from two attacks of trench fever, finds that the general distribution of this disease in a battalion follows most closely the distribution of lice, and he makes out a very good case for the louse transmission of trench fever.

Hurst [3] states that a medical officer developed the "short" form of trench fever after allowing the lice from a patient with this form of the disease to bite him. Whether the lice were applied directly or after a period of starvation is not stated; if the former condition obtained it may have been merely a mechanical tranference. Weldon and Davies [29] allowed four lice to bite for 15 minutes a man with trench fever—the stage of the patient's disease was stated to be acute. Each of these observers allowed two of those lice to feed upon himself. Weldon, 24 hours later, allowed his lice to have a further meal upon him; 18 days later Weldon developed trench fever and Davies did not. As Weldon was a pathologist and engaged on laboratory work, and presumably on work with trench-fever specimens, it is just possible that his may have been a laboratory infection.

We cannot regard the above experiment as proving that lice transmit trench fever, for the following reason:—

Last August we obtained from the Lister Institute, by the courtesy of Mr. A. Bacot, some lice which came from a two year-old pedigree stock of *P. humanus* which had never had any intimate relations with the troops in France or Salonica. One of us, who had never had trench fever, nourished these few lice until they had increased and multiplied. On Sept. 3rd eight of them which had previously been starved for 24 hours were allowed to feed for a period of four hours upon a typical case of trench fever at the height of the pyrexia of his first relapse. These eight lice were kept without food for 18 hours to avoid all chance of the mechanical transference of any organism, and at the end of that period they were allowed to feed upon the other of us. They fed upon him for about an hour twice daily from Sept. 4th until Sept. 11th, and every other day from Sept. 13th to 18th. By this time their numbers were diminished to two, as the remainder had been made into microscopic preparations at the end of 30, 54, 78, 100, 124, and 148 hours respectively after infection. Nothing of interest was discovered in these preparations, nor did the one who was bitten by those lice develop trench fever.

This experiment rather suggests that, if trench fever is a protozoal disease, the protozoon does not have part of its life-cycle in the body of the louse; or else that the patient's blood was non-infective at the time the lice fed upon him. Other lice were allowed to feed upon the same case during the next pyrexial period, but although serial sections of these were cut and stained both with Giemsa and iron hæmatoxylin, nothing unusual was discovered, and bodies of a protozoon-like nature were not found. (Contrast finding of *S. recurrentis* in infected lice [30 31 32]). We are aware that these experiments ought to be repeated and amplified, but it is difficult to find suitable volunteers.

There is other evidence against the hypothesis that trench fever is a louse-borne disease. Dyke [19] has noticed cases in men who have never been verminous, and two such cases have come to our own knowledge.

One of these was an R.A.M.C. sergeant, who, living at a casualty clearing station, had a hot bath daily; he had been fully alive to the possibility of danger from louse infestation, and was positive that he had never been verminous.

The other instance was that of our laboratory assistant, a medical student, who lived under the best conditions and had never in his life been verminous. He had worked for five months at the laboratory; his duties never took him to the wards, but he was engaged for several hours daily in research work on trench fever urines. He developed a bad and typical attack of trench-fever, which may or may not have been due to a laboratory infection.

Whatever future work is done with lice we think that a healthy strain of *P. humanus*, such as we are using, should be employed as a control against lice taken from infected soldiers, so as to settle definitely the point whether trench fever is a disease of man transmitted by the louse or some disease among lice themselves which is transmissible to man. If the latter, the prophylaxis consists entirely in the eradication of lice; if the former, the question arises of the possibility of human carriers taking a large part in the dissemination of the disease. Hurst [3] and Grieveson [16] believe that there are trench-fever carriers. Considering the evidence for and against the propagation of trench fever by means of lice, we can only say that transmission by lice is not proven. There is as yet no evidence that lice can pass on this disease if the mechanical factor is eliminated. It seems possible that pathological products, such as urine, may be infective; and if rats or mice are the reservoirs of the disease, as has been suggested, it is not unreasonable to suppose that their excreta also may be capable of causing the disease.

Prophylaxis.

Obviously, until the etiology of this disease becomes less obscure, no definite rules can be laid down on the subject of its prophylaxis. On general principles, and in the light of what has been said of the *Pediculus humanus*, eradication, or at least the diminution of body lice, should be attempted. Those who have worked with battalions know how hopeless any anti-louse campaign appears to be; but by means of constant supervision lice can be kept within reasonable numbers, even if they cannot altogether be eradicated. General hygiene and the protection of food from contamination by vermin should certainly be attempted. The supervision of carriers is at present merely of theoretical interest.

Future Work.

Valuable information regarding the etiology of trench fever might be obtained on the following lines: The blood of patients in their first attack of pyrexia, before the first relapse—in other words, before the diagnosis can be definitely made—needs to be very carefully investigated. The scanty occurrence of spirochætes in the urine, especially about the sixteenth day of disease, needs confirmation or refutation. The same may be said of the Wassermann reaction, which is stated to be given by late cases. Animal experiments, especially on anthropoids, should be made not only by blood injections but also with excreta and with lice. Further research on trench rats and mice and on the *P. humanus* is also needed, and might perhaps be done on the lines of the celebrated plague experiments.

Trench fever is a matter of national importance as far as man-power is concerned, and it merits the attention of every physician and pathologist who has the opportunity of working among the troops either at home or abroad.

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B.E.F., November, 1917.

MIDDLESEX SCHOOL MEDICAL OFFICERS.—Failing to get three assistant school medical officers at the salary of £350 a year, the Middlesex County Council has decided to offer £400, "in view of the salaries offered at the present time in adjoining counties," and of the fact that greater responsibility will fall on the officers if the Council undertakes the systematic medical inspection of "ailing children" as suggested by the Board of Education.

CASE RECORD CARDS FOR PHYSICAL TREATMENT.—The War Disablement Committee of the Royal Society of Medicine (Section of Balneology) has still in hand a number of cards specially designed to record results of physical treatment, including baths, electricity, &c. It was resolved at its last meeting to place these cards at the disposal of all practitioners making use of physical treatment for disabled soldiers, provided that the records be ultimately returned to the Royal Society of Medicine. A collection of these cards is being made from the spas and health resorts to form the basis of a special chapter in the "Medical History of the War." The cards can be obtained from Messrs. Adlard and Son and West Newman, 23, Bartholomew Close, E.C., at the cost price of £2 per 1000.

PROTOZOOLOGICAL AFFECTIONS OF THE INTESTINE: THE TREATMENT OF THE AMŒBIC CARRIER.

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AND
T. BENTHAM, B.SC. OXON.,
PROTOZOOLOGIST, ATTACHED R.A.M.C.

DURING June, July, August, and September, 1917, we had the opportunity of examining the stools of some 731 cases of troops from the Mediterranean war area admitted to the Military Hospital, Imtarfa, Malta. In all, 1766 examinations were made. During the first two months the majority of the stools examined by us were from suspected cases of bacillary dysentery, and a very large number were found so infected. In 538 individuals, however, animal parasites were found, and of these 82 proved to be carriers of *Entamœba histolytica* (see table). But few acute amœbic

1766 Examinations of 731 Cases of which 538 were Positive.

E. histolytica	82	Tetramitus cysts	44
E. coli	120	Free tetramitus	102
Free amœbæ	151	Trichomonas	49
Lamblia cysts	57	*E. nana*	31
Free lamblia	29		

infections were noted, but, as stated above, a fair proportion of carriers were diagnosed. [A tabular statement of findings in these 82 cases has been omitted owing to considerations of space.] It is with the treatment of these cases that this paper is primarily concerned.

By far the larger proportion of diarrhœic stools examined by us were found to contain flagellates, leaving out of consideration of course the findings for free amœbæ which in a large number of cases were not diagnosed unless their corresponding cysts were present with them in the stool. Cases of mixed infection were comparatively common, and *Entamœba histolytica* was most commonly accompanied by *E. coli* or tetramitus, or by both. In the acute stools, however, *E. histolytica* was usually found together with trichomonas. Lamblia and *E. histolytica* were only found very rarely together, which is surprising, as in our experience at home we have found this combination quite common.

Treatment with emetine was useless for all parasites but *E. histolytica*.

Treatment.

Starting with the postulate that neither emetine alone nor emetine bismuth iodide alone can be relied upon to eradicate the cysts permanently, a fact for which there is only too abundant evidence, we decided to treat a number of cases by emetine hypodermically and emetine bismuth iodide by the mouth coincidently. If relapses occurred we proposed to give a trial to hypodermic injections of emetine along with ipecacuanha by the mouth. We found the first method very successful, but we believe equally good results may be obtained by the second.

The cases, when diagnosed, were brought together in one special ward where treatment could be systematically carried out and properly supervised. The type of case varied: some were true carriers in that they presented no symptoms and were merely discovered to be amœbic carriers during routine examination. Others were men with slight diarrhœa, of which probably little would have been thought if the stools had not been examined. Others, again, were passing blood and mucus along with fæcal matter, and from the appearance of the amœbæ were in danger of starting an acute attack.

To be successful the treatment must be rigidly supervised.

In the great majority of our cases emetine was given in 1 gr. doses for five days, while emetine bismuth iodide was given in the usual way in pills, 3 gr. daily for 12 days, and begun on the same day as the emetine. The words "combined treatment" will be used to indicate the foregoing dosage, and must be read as always meaning this dosage unless it is otherwise stated.

The method of giving the pills seems of importance. We believe they should be given in the evening, the injection of emetine being given in the morning. Keratin-coated pills sometimes pass through the intestinal tract unchanged, and we gave almost exclusively salol-coated pills, which appeared very satisfactory. The pills received a double coating of a salol varnish, consisting of salol, shellac, and ether. It was always insisted upon that the patient should be actually seen swallowing the pills. We have heard of a number of cases whose subsequent relapses could readily be traced to some carelessness or insufficient supervision.

It was our practice throughout our series of cases to combine 1/60 gr. of strychnine with the emetine to combat its depressing effect on the blood pressure, and in a few cases where it was possible to estimate the blood pressure before and after treatment no material alteration was observed.

Vomiting was a rare occurrence, and we are surprised at the figures of Waddell[1] and his co-workers in this respect in their series of 102 cases. Towards the end of treatment nausea and diarrhœa were fairly common. Actual vomiting seems due to one of two conditions: either the pills are insufficiently coated or the patient's diet is on too generous a scale. In two cases where vomiting occurred on one occasion dilute hydrocyanic acid given half an hour before the pills checked its further occurrence, and in one highly neurotic subject bromide of potassium given in a similar way was equally successful.

Various diets were tried with the object of determining whether the amount and kind of food in any way influenced the results of treatment. The conclusion at which we arrived was that, provided the diet was light and readily digestible, the success of treatment was in no way prejudiced. Undoubtedly the more scanty the fare the less likely is vomiting to occur, and this is especially true when large doses of ipecacuanha are being administered.

Results of Treatment.

We have set down the result of this treatment in our first 30 cases, including all our failures or cases which failed to clear up after one course of treatment. We lay no claim to originality for this method of treatment. We know of isolated cases treated in a similar way by others, but we are not aware of any systematic use of the method in a considerable number of cases. The treatment is, of course, not always successful, but we believe that a successful result can be looked for in the vast majority of cases, while the probability of permanent cure is much greater. Our failures occurred in cases with a long-standing history of amœbic dysentery, in which it is easy to imagine that some amœbæ elude the action of the drugs. Wholly excellent results were obtained in the case of carriers with no symptoms and patients with no previous history of amœbiasis.

It is stated by Waddell[2] that treatment with emetine bismuth iodide alone fails in 20-25 per cent. of cases. This high percentage was obtained in their series, although they only observed their cases for 2-3 weeks and submitted them to, in our opinion, an inadequate number of examinations. While certain of our cases were under observation for six weeks or more, such a prolonged period was in many cases impossible, owing to conditions beyond our control. We always aimed, however, at a minimum period of observation of four weeks with six negative examinations. In only a few cases was this not attained. The average period during which these cases were observed subsequent to treatment was 31 days, and the average number of negatives obtained during this period was almost exactly six.

Lillie and Shepheard,[3] in a recent paper, show encouraging results in a series of 104 cases treated by emetine bismuth iodide alone, which were very adequately observed both in regard to time and the number of laboratory examinations. In a fair percentage of their cases, however, a successful result was only attained after a second or third course of emetine bismuth iodide. Doubtless many carriers who persist in showing cysts after one course of treatment will clear up after a second or a third. This, however, prolongs the treatment and the period of the patient's discomfort. A shorter and more certain course of treatment is obviously preferable; and we believe that the combined method of treatment meets the case.

The cases which we feel justified in believing to be cured underwent one course of combined treatment only. Of the three cases which we count as failures, one was apparently cured after a second course of treatment; the remaining two still continued to pass free amœbæ and cysts. It should be noted that these three cases can hardly be regarded as amœbic carriers; they were rather exceedingly chronic cases of amœbic dysentery.

Of the 30 cases which we consider here, 10 per cent. relapsed and 90 per cent. were apparently cured after one course of combined treatment. We have a considerable number of other cases still under treatment and observation. Too short a period has elapsed to enable us to form a correct judgment regarding them, but we hardly hope to obtain such a high percentage of successes in them. Up to the time of writing, however, the results compare favourably with any with which we are acquainted.

It should be noted, in conclusion, with reference to this method of treatment, that the general condition of the patients improves under treatment to a remarkable extent. No patient was kept in bed the whole day, considerable rest was advised, but absolute rest was only insisted upon for two hours before taking pills.

[The notes were here given of the 30 cases on which the above conclusions are based.]

Flagellate Dysentery.

The results of the treatment of dysentery caused by *Tetramitus mesnili* and *Lamblia intestinalis* are extremely disappointing. In our experience these parasites have been exceedingly common, although in a large proportian of cases they produce no symptoms. It is no doubt owing to this fact that flagellate dysentery has been regarded, and is still regarded in some quarters, as a disease of no moment. It is, however, beyond question that these parasites are capable of producing very severe symptoms and of causing much chronic ill-health. The number of drugs which have been recommended for these infections is a sure indication of their therapeutic worthlessness. A full literature will be found in the excellent work of Fantham, Stephens, and Theobald.[4]

Tetramitus dysentery.—The following is a record of the treatment of a case of tetramitus infection.

Patient, aged 33, admitted to hospital on April 17th, 1917. History of two or three slight attacks of dysentery (*sic*) in 1916. Diarrhœa with tenesmus and passage of blood and mucus began on April 13th. Blood and mucus present on admission and frequently observed afterwards. Tetramitus cysts found in stools. No other parasite and no dysentery bacilli were ever present. Saline treatment by mouth was adopted at outset and daily colon lavage with normal saline tried from May 8th to 25th. Creosote was tried, but so upset the digestion that it had to be stopped. B-naphthol begun on June 6th in 5 gr. doses thrice daily, but without effect. On June 29th one grain of emetine was given hypodermically and continued for five days, after which three grains of bismuth emetine iodide were given daily for six days. This was also without avail, and we have frequently observed the failure of this treatment in tetramitus cases.

On July 13th thymol, as recommended by Smithies,[5] was given in an anthelmintic dose along with two grains of calomel. After this free tetramitus were abundant. On July 17th a course of silver nitrate (¼ gr. thrice daily) was commenced and continued for a fortnight, and finally, following Escomel,[6] we gave an anthelmintic dose of oil of turpentine. At the close of this varied treatment tetramitus, both free and encysted, were as numerous as ever.

Another case was treated by a long course of creosote, ending up with 2 c.cm. of oil of turpentine, with an equally unsatisfactory result.

Lamblia dysentery.—It is rare to find acute symptoms produced by lamblia infection, but chronic diarrhœa is in our experience very common. As the parasite inhabits the small intestine and has a firm hold of the mucous membrane with its suctorial discs, it is not surprising that treatment is difficult and results disappointing. Male fern has been recommended (Prowazek and Werner[7]); we gave it a trial in one case in the dose of one drachm, but without any effect. The pathogenicity of lamblia is often doubted, but Captain Scott Pinchin very kindly placed at our disposal the notes of a case of extremely acute lamblia infection.

Patient retired to bed one night in perfect health and was awakened at 6 o'clock the following morning by profuse watery evacuations, tenesmus, and violent cramps. The symptoms and stools closely resembled those of cholera, but the stools revealed nothing but the presence of lamblia in myriads. At 10 A.M. patient's condition was serious in the extreme. He was literally dried up on account of the violent diarrhœa, the skin was cold, and cyanosis was commencing. The timely infusion of two pints of hypertonic saline was carried out, and was followed by prompt and complete recovery.

We desire to express our indebtedness to Lieutenant-Colonel G. B. Price, the Commanding Officer of the Military Hospital, Intarfa, for permission to publish this paper and for the facilities he has afforded us in our work.

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THE Taunton and Somerset Hospital has raised £3800 of the £4000 required to defray the existing debt.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—At a meeting of the President and Fellows of the Royal College of Physicians of Ireland held on March 1st Dr. J. F. O'Carroll, the President, in the chair, Dr. George Sigerson was elected an Honorary Fellow of the College.

KNEE-JOINT WOUNDS AT A CASUALTY CLEARING STATION.

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THE following notes are on 73 consecutive cases of knee-joint wounds treated at a casualty clearing station in France.

An attempt has been made in this series of cases to remove foreign bodies and loose bone from the joint, to wash out dirt or blood clot, and to close the joint capsule and external wound. This done, a splint has been applied (usually a Thomas or a modified Thomas), and the knee left without change of dressings for three to seven days.

In times of rush it was impossible to keep the patients more than a day or two, but in quieter times we kept them much longer. The average time in the casualty clearing station for this series is 5·2 days. The degree of primary success has been very much greater than was expected, and so far as the reports from the base in France go the same can be said. Unfortunately, the reports from the home hospitals are very few, although we have waited six months since the last case left the C.C.S.

There have been three deaths reported in the series of 73; two at the C.C.S. and one in England. Four cases have required amputation here, one for infection by *Streptococcus longus* (died as above), and three for gas gangrene developing in the limb, one of whom died. We have only one record of an amputation being done at the base or in England, and certainly no case left the C.C.S. where such a result was anticipated, and most of the cases had a fair chance of getting a useful joint.

(A) All cases. (B) Penetration of knee-joint, not accompanied by fracture. (C) Accompanied by fracture.

		(A)	(B)	(C)
Total No.		73	49	24
Evacuated to base	Leg sound	67	46	21
	After amputation	2	1	1
	After excision of patella	2	—	2
Died after amputation		2	2	—

The bones involved in (C) were: Femur—complete, 3; partial, 6 (1 amputation); tibia, 2; patella, tibia, and fibula, 2; patella and femur, 3; patella, 4 (2 excisions); fibula, 1.

The following are the methods of treatment and account of reports:—

Method of treatment.—Opened, irrigated, and closed, 49; capsule not closed, 14; capsule not opened, 10.

Antiseptic used.—Eusol, 39; soap, 20; none, 6; ether, 3; B.I.P.P., 3; hydrogen peroxide, 1; saline, 1.

Casualty Clearing Station.—4 amputations; 2 excisions of patella. Others all doing well and expected to retain limb, and many expected to have useful joints.

Base.—50 reports received. No deaths. 1 amputation for gas gangrene, calf. 1 joint opened and drained.

United Kingdom.—16 Reports.

1 "discharged to duty."
1 "nearly complete range of movement."
1 "not ankylosed."
1 "impaired movement; improving."
1 "patella moves, and to begin movement soon. Excellent condition."
2 "doing well."
1 reports arrival.
2 "ankylosed."
1 "in plaster and crutches."
4 discharged unfit for service; (*a*) 3 stiff joints, (*b*) 1 much stiffness.
1 death—septicæmia.

Notes of Cases.

1. Revolver bullet. Entrance wound cleaned up and excised. Bullet removed from interior of joint at lower level of patella. Wounds closed. Thomas's splint. Eusol. In C.C.S. 11 days. Base: Doing well. Evacuated to England. England: Discharged to depôt. Fit for service.

2. Shell. Patella excised. Joint irrigated and closed. C.F. (Compound fracture of patella.) Eusol. In C.C.S. 4 days. Base: Diagnosis confirmed. Wound examined and dressed with eusol. England: Ankylosis. Quite useful limb.

3. Shell. Penetrating wound left knee-joint. Piece of metal removed from outer side of joint. Synovial cavity closed. Eusol. In C.C.S. 1 day. Track seemed fairly clean. Base: 21 days later to England. Knee: saline dressings. Clean. Healed. England: Nil.

4. Shell. Small entrance wound below and to outer side of margin of patella. Track followed down to external condyle. Joint full of blood. On full flexion piece of damaged cartilage found, on removing which piece of metal discovered. Bone chiselled away round this. Metal removed. Joint irrigated with soap solution. Wound closed. Page's splint. In C.C.S. 7 days. Base: T. 99°, P. 90. Slight extension applied. Sutures removed. Iodine dressing. Four days later T. and P. normal. Two days later T. 99·2°, P. 88. Much improved. Wound quite clean. England: Nil.

5. Shell. Track opened up. F.B. exposed and chiselled out of bone. Joint sutured. Page's splint. Soap solution. In C.C.S. 7 days. Base: No signs of infection. Little swelling. No other sign of significance. Wound healing without constitutional symptoms. England: Nil.

6. Shell. Joint opened. Loose bone scraped out, together with cloth. Large piece of metal removed by incisions above and to inner side of patella. Page's splint. C.F. Internal condyle femur fractured. Closed. Soap dressing. In C.C.S. 7 days. Base: Patient developed septic

arthritis. Drainage of joint and aspiration; large amount of pus evacuated from joint recesses. Slow improvement. Evacuation to England in good general condition 30 days after injury. Some osteomyelitis of femur remains and low joint infection. U.K.: Knee stiff, but not ankylosed.

7. Shell. Wound opened up and piece of shrapnel removed, seven-eighths out and one-eighth in joint. Page's splint. Closed. Soap solution. In C.C.S. 11 days. Base: 10 days after C.C.S. a little fluid left knee and a little swelling. Kept on same splint. T. and P. normal. England: Nil.

8. Shell. Capsule cut down upon and cloth removed; also metal ½ in. by ¼ in. between crucial ligaments. Closed. Soap solution. In C.C.S. 6 days. Base: Joint quietening down. England: In plaster. Going about on crutches.

I have to thank Captain H. T. Bates and Captain P. McEwan for notes on their cases, which are included.

THE OPERATIVE CORRECTION OF DEFORMITY IN GUNSHOT FRACTURES.

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AND
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MUCH has been learnt regarding the treatment of all fractures since the beginning of the war. Recently arrangements have been made for the complete treatment of a large number of fractures of the femur in hospitals in France, and excellent results are being obtained by the many extension apparatuses—Thomas's splint, Sinclair's net frame, &c. But one constantly sees soundly healed fractures in which these methods have failed to obtain a satisfactory result. These must be treated by open operation, and this is not to be undertaken without grave consideration.

In the Cambridge Hospital, Aldershot, we have two distinct groups of cases—simple fractures among men undergoing military training and gunshot fractures from the Forces overseas.

Simple Fractures.

In the simple fractures in most cases the patient is first put on some form of extension, and, if good alignment is not obtained after a short interval, operation is proceeded with. We find there are two types of recent fracture in which operation is nearly always required—namely, spiral fractures in any part of the shaft and any fracture near a joint. The question may here be raised as to when an operation should be decided on in cases where a preliminary trial of extension methods has been employed. If operation is delayed beyond a month there is much trouble in removing the callus and exposing the original fracture line. The ends have got somewhat rounded off so that they do not fit neatly together. Most important of all, the bone has become rarefied; and although where one is working with two long fragments this has little or no effect on the strength of the primary junction made by the plate and screws, it is of great importance when one is dealing with a short fragment in the neighbourhood of a joint. One of our cases bears out this point. A trial of extension methods need not be prolonged beyond a fortnight, for if by then correct position and alignment have not been obtained it is extremely unlikely that any improvement will afterwards supervene.

In all our operations Lane's technique is carefully followed.

Towels are clipped along the edges of the incision so that no portion of skin is exposed. The knife used for the primary incision is discarded and for the deeper dissection a second is employed. Every manipulation is carried out with instruments, and nothing which has even touched the gloved hand of the operator or his assistant is allowed to come into contact with the wound.

In all cases no foreign material but the plate is left in the wound. The only exception to this rule is that occasionally a larger vessel is not controlled by forcipressure, and then a catgut ligature is applied, the knot being tied with instruments. Mopping is done with gauze on long forceps.

The skin edges are brought together with Michel's clips, so preventing anything that has passed through the skin entering the wound.

Where this ritual can be observed carefully in all its details the surgeon may operate on any simple fracture with the utmost confidence.

Gunshot Fractures.

We do not propose to discuss the treatment during the septic discharging period, but to pass on to those cases apparently soundly healed, but where malunion very much impairs the usefulness of the limb. The deformity can only be corrected by an open operation. The question of lighting up a latent infection has always to be considered, and opinion varies much as to the time which should be allowed to elapse between the healing of the wound and operation. As this is the point around which turns the success of the operative treatment of gunshot fractures we will now state how we have been guided to a decision.

As soon as one of these cases came under our charge we first turned our attention to the improvement of the nutrition of the limb, for if the deformity is merely reduced the patient would be left little better off than before, because the muscles would be atrophied and fibrosed and the joints stiff. Massage, hot-air baths, and electrical treatment were started, and in this way scars were relieved, induration and œdema cleared up, and the mobility of joints improved. In the course of this preparation a number of wounds became inflamed, and in some cases began to discharge again. From this observation we got the idea that a careful trial with massage, electrical treatment, and exercises would be the safest guide as to the quiescence or not of the infection, and we started the practice of submitting the limb to manipulations of increasing severity and carefully observing the result.

For the first few days light massage is employed, and this seldom gives rise to any disturbance, but if it does it is obvious that the organisms are still in an active state and that operation is a long way off. In those cases where this preliminary massage produces no reaction the masseur is instructed to manipulate the deeper structures—the structures around the fractured ends. This frequently causes pain lasting for some hours, development of local swelling and tenderness, accompanied by local rise of temperature, all indications that the organisms lying in the deeper recesses of the wound are still too active. Further, if no trouble arises after the above measures the patient, in addition, passes on to graduated exercises involving active movement of the neighbouring joints, and in cases where no serious discomfort ensues one can reasonably consider the question of operation.

The following cases illustrate these points:—

1. Private T. Gunshot wound of shoulder; fracture involved head of humerus and clavicle; head of bone had been excised. Five months afterwards wounds almost healed; massage begun. Effleurage caused general reaction necessitating free incisions and removal of several small sequestra.

2. Private B. G.S.W. of radius. Massage started three months after he was wounded; wounds had been closed for three weeks. At end of six days' treatment limb became red and swollen; sinus opened; fortnight later sequestrum removed.

3. Captain M. G.S.W. of humerus with lesion of musculo-spiral nerve. Sinus had discharged at intervals; several small sequestra had separated and been removed. When massage was commenced wound had been completely healed for two months, but when stage of heavy massage was reached wound broke down again, sinus reopened, and piece of catgut was discharged.

The next case shows how dangerous it is to carry out what seem to be comparatively safe measures without having previously tested the quiescence of the infection.

4. Private R. G.S.W. of femur; fracture in middle of thigh. Eleven months after being wounded there was still a sinus discharging on outer aspect of limb. X ray showed sequestrum. An incision was made and this dead bone removed. As temperature had been quite normal for some months, it was thought perfectly safe forcibly to move knee-joint through a few degrees. This was carried out; a few adhesions were broken down and knee-joint flexed through rather less than 10°. A septic arthritis developed, which ultimately resulted in amputation through thigh. The various stages of massage should have been carried out before forcible movement was adopted.

With regard to the actual operation in gunshot fractures the important point is that no bone should be cut away. The patient benefits little if the limb is simply straightened without being lengthened. We consider that the restoration of the bone to its full length is so important that, at the risk of being wearisome, we would discuss briefly the best means of assuring full correction both in transverse and oblique or spiral fractures.

The malunited fracture is fully exposed through a long incision. The bone is divided at line of union and the ends carefully freed. All new formation is removed as far as possible to re-establish as closely as can be done the condition immediately after the fracture.

In the transverse variety the two ends are now caught with the bone-holding forceps and drawn well out of the wound, the limb being acutely bent at fracture line. The ends are now easily brought together and are clamped and held together with another bone-holding forceps while an assistant forces the limb out straight.

In the spiral fracture the method is somewhat different. If the above method is tried the two oblique ends always glide past one another whenever the assistant tries to straighten the limb. The two fragments really form two inclined planes that can be made to glide on one another. After freeing, as above described, the two planes are laid together. The pull of the muscles brings the base of one plane almost opposite the base of the other. The jaws of a strong bone-holding forceps grasp and crush the two planes together. Sometimes this simple pressure will make them glide so that the point of one fragment lies opposite the base of the other, thus producing complete correction of the deformity. Usually it is necessary to insinuate an elevator between the planes or the end of the screwdriver, and rolling this at the same time as pressure is made with the holding forceps the two surfaces glide into accurate apposition.

Another means of doing the same thing is to clamp the two planes together with one holding forceps. Take the other forceps and apply the jaws a little obliquely. The first pair is now relaxed and this second pair are closed tightly. The planes glide, the obliquity of the forceps disappears, and they come to grip transversely. The first forceps are now tightened to prevent slipping back and an oblique grip is taken again. This process being repeated until the ends have come into correct apposition.

Results.

In coming to the results of this operative line of treatment we may discuss them from several points of view. 1. The amount of shortening may be regarded as nil in the simple fractures, and in gunshot fractures only such shortening results as is accounted for by the actual loss of bone from the direct effect of the missile or from the necrosis resulting from sepsis. In either case perfect position and alignment are obtained. 2. Though in some cases the range of movement in the joints is defective, we have obtained a better range than in the cases we have treated by the non-operative methods. This is especially true of the simple fractures. 3. As the amount of pain and œdema is in most cases in direct proportion to the amount of deformity, it necessarily follows that this is less marked in the plated fractures.

It is natural to ask what trouble we have had with sepsis in the gunshot fractures. It is comparatively little, and taking all the plating of fractures we have done we find that the majority have healed by first intention. In a small proportion there has been a mild sepsis, which has entailed the removal of the plate after firm union had taken place. In a few cases such a conflagration has been kindled that the plate has had to be removed immediately, but in no case has the patient been left worse off than he was before the operation.

In conclusion, we would express to Colonel Sir Arbuthnot Lane our appreciation of all he has taught us regarding the surgery of fractures, and we would thank Lieutenant-Colonel McNaught for permission to make use of the hospital records.

NOTES ON A CASE OF POISONING BY CORROSIVE SUBLIMATE.[1]

BY GIBBON FITZGIBBON, M.D. DUB., F.R.C.P. IREL.,
GYNÆCOLOGIST, ROYAL CITY OF DUBLIN HOSPITAL.

I HAVE only met one case like the following reported in the medical journals, but it was similar in almost every respect, the poison having been introduced in the same way, and although coming under treatment in about eight hours died on the ninth or tenth day.

The patient, married, aged 32, introduced an 8·75 gr. tabloid of corrosive sublimate into her vagina to prevent possible impregnation. Four hours later I was sent for owing to acute pain in the vagina. Fairly profuse watery discharge issued from the vagina, and the whole mucous membrane was considerably reddened; no ulceration or evident break in surface. Vagina very dry and hot; great deal of tenderness. No remains of tabloid found. I gave a very copious and prolonged douche of soapy water and told the patient to drink as much fluid as possible.

Next morning (after 15 hours) patient appeared very well; increased tenderness in vagina; necrosis of surface epithelium. Plentiful secretion of urine; bowels had acted well. (House mixture given previous night.) Another prolonged vaginal douche was given and a large rubber tube introduced into vagina in view of inevitable sloughing. During the next 12 hours bowels acted five times; plenty of urine secreted; large quantities of water, milk and soda-water, and albumin water taken; also light diet.

After 36 hours: Condition of patient seemed very good, vaginal mucous membrane now necrotic, slight swelling of gums and distinct blue line along margins. Tongue felt sore; general feeling of dryness in throat. Ducts of submaxillary glands both marked by small patches of white. During the last 12 hours only about 5 ounces of urine secreted. In next 24 hours about 2 ounces. The bowels acted twice after purgation; quantities of fluid taken. Hot fomentation continually applied over kidneys; mixture of digitalis, strychnine, and spirit. ether. nitrosi four hourly.

On third morning (60 hours): Whole vagina lined with dark-brown necrotic coating; edges of gums along teeth necrotic; patches under tongue had spread considerably and become necrotic. Whole tongue swollen; some difficulty in swallowing. During next 24 hours less fluid was taken; saline enemata started (every three hours 8 to 10 ounces). Urine not more than a few drachms.

Fourth morning (84 hours): Little change; more necrosis in mouth and more difficulty in swallowing, but during day about 80 ounces of fluid taken and enemata all retained but one. No urine. Temperature continued normal; pulse about 80 and good.

Fifth day (108 hours): Condition much the same; about 70 ounces of fluid taken; enemata fairly well retained. Action of bowels more frequent (six motions in 24 hours); motions watery, with what appeared to be flaky mucus or bits of necrotic mucous membrane and fæcal matter. Urine about 1½ ounces.

Sixth morning (132 hours): Mouth very bad, a lot of sloughs beginning to loosen; patient unable to speak owing to swelling of tongue and throat. Only about 20 ounces of fluid taken. During the day enemata well retained; bowels acted once. Sulphur bath given. No urine. During following night only 3 ounces of milk taken; enemata had to be reduced to 4 ounces; only two retained. One motion (contained blood). Temperature still normal. Pulse 80-90.

Seventh morning (156 hours): Patient quite unable to swallow; very little given by enemata. (Œsophageal tube passed three times; two pints of soda bicarb. solution introduced, with half-pint of milk and egg-flip. Five motions, the first containing much melæna and others increasing quantity of fresh blood. In the evening 1 ounce of urine was drawn off.

Eighth morning (180 hours): Condition much the same. During the day only two motions; rather less blood, though marked and fresh. In the morning 1½ ounces of urine by catheter; 3 ounces in evening. (Œsophageal tube passed twice and six pints of fluid and egg-flip given. Patient slept a little more and seemed easier; able to swallow a little.

Ninth morning (204 hours): Patient very drowsy. During the day blood passed several times from bowel. She became somewhat delirious. Horse serum, 20 c.cm., hypodermically. During the 24 hours 11 ounces of urine drawn off, and six pints of fluid given by tube. Temperature still normal; pulse 80 to 90. During night 13 ounces of urine drawn off. Patient was less restless, though did not sleep soundly. Good deal of bleeding from bowel; horse serum, 20 c.cm., repeated. Pulse about 80.

Tenth morning (228 hours): Patient more drowsy and respiration heavier; twitchings of mouth and face. Temperature rose to 101° F.; pulse about 90. Six pints of fluid by œsophageal tube. Bleeding from bowel more profuse. At 10.30 A.M. 18 ounces of urine drawn off, and at 6 P.M. 22 ounces. During the night patient became semi-comatose. A larger quantity of blood passed per rectum; 27 ounces of urine drawn off. Numerous slight fits, marked twitchings of face and sometimes arms, but no stage of rigidity. Temperature rose gradually to 102°, and pulse to 104.

Eleventh morning (252 hours): Patient unconscious; bleeding from bowel; 5 ounces of urine drawn off at 10 A.M. and 4 ounces at 3.40 P.M. By œsophageal tube (passed with difficulty owing to convulsive spasm) four pints of fluid. Temperature about 102°. The patient died at 4.45 P.M. From beginning of suppression of urine patient was kept surrounded with hot-water bottles, very free sweating was maintained.

Post mortem.—On opening abdomen intestines slightly injected; nothing very remarkable on superficial examination; no ascitic fluid. Upper part of jejunum had enlarged blood-vessels on outside; mucous membrane normal. The mucous membrane of ileum and upper part of colon also showed no very marked change, but in lower part of colon and sigmoid flexure the mucous membrane was found detached and came off in patches. Kidneys were very slightly enlarged and very congested on surface; some patches softer than general organs. Liver little if anything altered. Microscopic sections of large intestine showed loss of surface mucous membrane. Sections of kidneys showed an almost universal destruction of epithelium, particularly marked in tubules, many being quite devoid of epithelium. No extravasation of blood in excretory tubules nor in glomeruli.

When urine began to be secreted again on the eighth day it was pale in colour and contained only a very slight trace of albumin; at no time on subsequent days was there any blood in the urine or more than a mere trace of albumin. A small quantity of urine at this time was tested for evidence of metallic mercury, but none was found. On one day during the period of practically complete suppression of urine what came away in the catheter was blood-stained, but this may have come from the urethra.

The sloughing of the vagina was very deep and the sloughs never separated; there always appeared to be sloughing deeper in the tissues. There was relatively little bleeding from the vagina.

When the kidneys began to act again it was hoped that the elimination of the poison would be effected, but from that time the symptoms of uræmic poisoning began to develop and increased, although during the three days prior to death the quantity of fluid excreted by the kidneys steadily increased, being 11 ounces, 42 ounces, and 54 ounces, falling off to 9 ounces in the last eight hours.

In reporting my case I am not able to lay down any proper line of treatment to be adopted; that which I did adopt was not successful. I endeavoured to promote excretion, but it appears that the excretion of the poison had so destructive an effect upon the epithelium of the kidneys that it destroyed their normal action, and the patient died from renal insufficiency and consequent uræmia. Also it must have been the excretion of the poison which caused the necrosis of the mucous membrane of the lower bowel and of the salivary glands and gums; this latter was evident in 36 hours and progressed very rapidly. The effect upon the kidneys showed itself after 24 hours, and from 12 hours later, during the next seven days, there was only about 3 ounces of fluid drawn off from the bladder. Unfortunately, no full analysis of the fluid excreted by the kidneys was made, but it is probable that if such had been done the fluid would have been found to consist almost solely of the watery elements of the urine with little or no urea and other waste matters, and thus account for the terminal uræmia, in spite of the apparent recovery of the renal function.

It appears to me that the only means of combating the poison in such a case would be to tie up the mineral in the tissues, so that it would not be excreted in bulk, and this must be done very soon after its introduction; but how this is to be done or with what drug I do not know. Possibly an extensive and deep removal of the mucous membrane of the whole vagina would be the only means of removing the poison before its absorption into the system, and so preventing its excretion by the kidneys and other organs upon which it has so destructive an action.

[1] Read before the Royal Academy of Medicine in Ireland.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

The Selection of Candidates for the Air Service.

A MEETING of this society was held on March 11th, Sir STCLAIR THOMSON, the President, being in the chair.

Surgeon H. GRAEME ANDERSON, R.N., read a paper on the Selection of Candidates for the Air Service, which we print at length on the opening page of our present issue.

Fleet-Surgeon R. C. MUNDAY, R.N., said that the ideal we had to aim at was on the one hand to exclude from aviation all those who from medical causes would swell the non-effective lists, the casualty returns, the number of fatal accidents, and the number of crashed machines; while, on the other hand, at this crisis in the national fortunes we must ever strive to attain such perfection of method in examination that we prevent no man from serving the King and country in the air who was fit to do so. To attain this we must see that every member of the examining staff was keen and efficient and supplied with all the apparatus required, the room in which he worked reasonably quiet, spacious, well lighted, sufficiently warm, and properly ventilated. There must be a sufficient number of examiners to prevent overwork and brain fatigue towards the end of the day from clouding their judgment and relaxing their keenness and alertness, and to afford ample time for the careful compilation of records of each case, so that our standards might be checked by statistics as to the after-history of each candidate. Time must also be available for intercommunication, consultation, and conference between examiners. They should gain practical experience of the medical aspects of aviation by periodic and sufficiently extended residence in medical charge of aerodromes. Most of the above conditions were now fulfilled at the Commissions Board at Hampstead, or were in course of attainment. There was no finality in the work of seeking the best method of testing candidates for aviation. We must keep abreast of the rapid progress made in the art of flying and the continual improvement in the design of machines, and do all we could to base our selection of pilots on a sound foundation established on practical experience of the after-history of the candidates selected, combined with results of research on the medical aspects of aviation conducted by British and foreign workers. It was absolutely necessary in order to avoid waste of good material that standards of fitness should be graded in accordance with the various flying duties, and it was with the standards of vision that this was of particular value. Reasonable latitude of standard might be allowed to all grades of flying men except those who pilot or observe from or act as gunners in fighting machines. There must be no doubt about the accuracy of colour vision in all cases. The question of heterophoria was of vital importance. Sound tests for the acuity of night vision were being worked out in collaboration with Professor Spearman, of University College, London. With regard to venereal disease, he considered that no candidate should be passed within two years of the last manifestation of active syphilis, and much would then depend on the nature and extent of the treatment he had received and on his Wassermann reaction. He was strongly in favour of no alcohol being consumed at any aerodrome until the flying was over for the day, and then in limited quantities. Even moderate doses of alcohol might have fatal effects if flying was performed while the drug was still acting or reacting on the cardio-vascular and nervous systems. We should not be too sweeping in our rejection of candidates who had suffered from malaria. The degree of severity of attacks, the condition of the viscera, the nature of the treatment received, and the habits of the candidate must be taken into account. He suggested that the speed of the machine was a factor to be considered in deciding whether an aviator was for the most part dependent on impressions conveyed through the eyes for his sense of balance, or on muscle sense and vestibular reaction. The attitude of the aviator in his machine was of great importance during a steep spiral. If he maintained the usual attitude the centrifugal action must seriously affect the cerebral blood pressure, whereas if he leant back as far as possible centrifugal action on the brain was almost *nil*.

Surgeon-General Sir W. H. NORMAN, Director-General of the Navy Medical Service, laid stress on the importance of vision and good colour vision.

Surgeon-General T. H. GOODWIN, Director-General, Army Medical Service, said that in America careful tests were being carried out, and examiners had told him that they had noticed that good pilots were usually bad sailors.

Mr. ERNEST CLARKE insisted on the importance of perfect vision. Every man should have his vision tested under a cycloplegic; simply testing with a + glass was not sufficient. The condition of the eye had a large amount to do with accidents. Stereoscopic vision was very important, especially in landing. Night flying was a very severe strain and required absolutely perfect vision.

Captain H. D. BRIGGS, R.N., said that simple methods of examination were necessary. The candidate should be looked at from the human point of view. With regard to vision, glasses were a disability and a danger, and he suggested that a candidate who could see well without them should not be turned down for a visual defect. He always repressed alcohol among aviators. Those with doubtful vision should fly alone, as they had no right to involve others in a risk which they took themselves. Good hearing was important, so that defects could be detected.

Surgeon-General Sir WATSON CHEYNE, R.N., emphasised the need for specially trained medical officers.

Major H. SMURTHWAITE, R.A.M.C., said that many flying at an altitude of 20,000 feet had told him that they invariably took a deep breath every 1000 feet, and he thought that the sensations experienced by them were connected with the question of blood pressure. He had examined men before going up and after coming down with regard to hearing, bone conduction, &c., and he thought that the loss in bone conduction was probably due to the effect of a change in blood pressure on the semicircular canals. We should try to obviate the change in atmospheric pressure in some way.

Sir JAMES GALLOWAY, Chief Commissioner of Medical Services, Ministry of National Service, asked for a code of instructions as to the medical examinations to be carried out in these cases as the best way of getting standardi-ed and therefore useful work. Especially would he ask for some standardi-ed method for the examination of colour vision.

Mr. L. VERNON CARGILL agreed as to the importance of heterophoria as a cause of accidents. Colour vision should be tested by the Edridge-Green lamp. Stereoscopic vision and a perfect visual field in each eye were very necessary.

Major H. C. T. LANGDON, President of the Commissions Board, R.F.C., said that no likely officer should be rejected. There was great difficulty in finding out during the medical examination whether a man had the flying temperament. About 10 per cent. broke down during instruction, and these were unsuitable temperamentally.

Major MARTIN FLACK said that the important point for the doctor in the examination of candidates was sympathy; the things he had to look for were temperament and the resistance to fatigue. Sympathy was necessary in every medical officer who had to deal with aviators. He had to realise that he was in charge of a human machine, and must see that each separate part was in order. He (Major Flack) had been attempting to devise simple tests for the reaction of the normal human machine. Speaking of temperament, he said that about 40 per cent. of picked pilots gave a history of concussion of varying degrees. The flying temperament readily led a man into conditions where he got concussed; but here we were dealing with the man who could recover from concussion and was therefore a suitable flying man. With regard to fatigue, pilots should be examined at the end of training to determine how they had stood the stress. The time to grade was after the period of training.

Dr. F. J. POYNTON, Surgeon-General H. D. ROLLESTON, R.N., and Captain T. S. RIPPON (School of Instruction, R.F.C., Hendon) also spoke, and Surgeon ANDERSON briefly replied.

LONDON DERMATOLOGICAL SOCIETY.—A meeting of this society was held on Feb. 19th, Captain W. Griffith, the President, being in the chair.—Dr. Morgan Dockrell exhibited microscopical sections of "White Spot Disease."—Dr. J. L. Bunch showed a case of Band Alopecia occurring in a patient with no previous patches.—Dr. E. J. D. Mitchell brought forward two cases of Syphilis, in which the lesions have disappeared after two injections of novarsenobillon.—Dr. W. Knowsley Sibley showed a case of Recurrent Seborrhœa-Psoriasis in a patient who had been operated on for radical cure of hernia.—Mr. A. T. Bremner (Leicester) read a paper entitled "The Facial Flush Area" and its Diseases.

HUNTERIAN SOCIETY.

Twilight Sleep: Its Advantages and Disadvantages.

A MEETING of this society was held at the house of the Royal Society of Medicine on March 6th, Mr. HUGH LETT, the President, being in the chair.

Dr. G. BLACKER opened a discussion on Twilight Sleep. The paper will be published at length in THE LANCET. After detailing the technique, as described by Krönig and Gauss, Dr. Blacker thought it might be admitted that scopolamine narcosis was capable of producing complete or partial amnesia in some three-quarters of all suitable cases if carried out with proper technique. The effects on the organs of the body, on uterine contraction, the course of the puerperium, and ability to suckle were considered in turn, and finally the effect on the child. Dr. Blacker then went on to summarise the results recorded by various observers, and the report of the committee to the Obstetrical Section of the Royal Society of Medicine.[1] He said that he had purposely dwelt more on the drawbacks and dangers of the method, since the encomiums passed upon twilight sleep by some of those who took part in the discussion following the report might leave the impression that the method was free from any possible objection. The delivery of a patient in a condition of twilight sleep, Dr. Blacker concluded, required a considerable amount of experience and obstetric skill to carry out successfully, and on the whole the disadvantages of the method must be held to outweigh the advantages.

The PRESIDENT complimented Dr. Blacker on the able résumé and the fair way in which he balanced the arguments.

Dr. AMAND ROUTH said his impression was that the routine and technique of twilight sleep were adopted far too much as a general routine. There must be many contra-indications, while there may be many suitable cases. Dr. Routh thought it was less serviceable in primiparæ on account of the prolongation of the second stage, and production of uterine inertia. It was most useful in highly strung women who would not otherwise face the pains of childbirth.

Dr. HERBERT SPENCER said that he regarded twilight sleep, "painless labour" as it is falsely called, as a cruel and dangerous fraud on mothers and babies. "It is," he continued, "a fraud to speak of painless labour in a woman who cries out and gives every sign of suffering acute physical pain although she may forget it afterwards, in a women who may have horrid nightmare and become maniacal and, therefore, needs constant watching in order that she may not do herself injury. It is dangerous to give such drugs as scopolamine and morphia which, moreover, require in a large proportion of cases the administration of inhalation anæsthesia, often given to the dangerous surgical degree; these drugs weaken the uterine contractions, as is shown by the frequent use of pituitrin and forceps, which again increase the danger of labour to both mother and child. It has been asserted by the advocates of twilight sleep that there is no increased danger, and they have tried to support their statements by statistics which well deserve the cynical description of 'les mensonges en chiffres,' and not only are mutually destructive, but often bear their untruth on the surface. What would be more misleading than the latest statistical statement of Siegel from the Freiburg clinic, the cradle of twilight sleep, that '5000-6000 mothers' have been delivered without a single death?—a statement which—unless dangerous and difficult cases have been excluded—will not be accepted by any obstetrician as having the slightest statistical value. The inherent dangers of scopolamine and morphia (or pantopon or narcophine, for the drug is constantly changing), the frequent use of forceps, and the occurrence in the child of 'oligopnœa,' apnœa, or asphyxia in about one-third of the cases must of necessity increase the dangers both for the mothers and children. I showed more than 25 years ago[2] the dangers to the child of delivery by forceps and the dangers to the mother's subsequent health of forceps used with the frequency with which some advocates of twilight sleep employ it are very great. Such a frequent use is a very retrograde move in midwifery practice. In the first stage of labour there are obstetrical, social, domestic, and hygienic advantages in the patient's walking about, resting at times in a high easy chair. Bromides, chloral, and opium (which is much better than morphia) and in the second stage light chloroform anæsthesia during the pains are much better and less dangerous means of relieving the pains of labour than scopolamine and morphia. Instead of deceiving the patient by speaking of 'painless' labour, the honest thing is to tell her that she will feel the pains, but usually will not remember them afterwards, and to obtain such comfort as this she will run some extra risk to herself and her child. The oblivion of labour-pains claimed for scopolamine and morphia has been bountifully granted to women by Nature as finely expressed in the Gospel of St. John: 'A woman when she is in travail hath sorrow because her hour is come; but as soon as she is delivered of the child she remembereth no longer her anguish, for joy that a man is born into the world.' The advocates of twilight sleep take away her joy for fear she should remember her anguish, remove her new-born babe in order that she may not 'reconstruct' her labour when she hears its cry, the sweetest music to a mother's ear."

Dr. J. S. FAIRBAIRN, as a member of the committee appointed by the Royal Society of Medicine to report on the subject of twilight sleep,[1] said twilight sleep was made in Germany and boomed in America, and was being thrust by the public upon the medical profession. The great objection to its general adoption, he urged, was the demand made on the practitioner. He had not had any bad results; every woman reacted differently to the hyoscine. The condition was like intoxication rather than sleep—that of the man who has had a row in a "pub" and wakes up in the police cell with a blank memory. This was due to the difficulty in standardising the dose. Dr. W. Osborne Greenwood, he added, had shown that many of these effects could be obviated by standardising the dose for each woman. Twilight sleep had been tried at St. Thomas's Hospital for some time, and the nurses came to the conclusion that the women had a worse time when it was left off. In long and exhausting labours he considered that twilight sleep allowed the head to become moulded and often low-forceps delivery was possible instead of high. But the cases must have two nurses and a doctor in constant attendance owing to the possible accompaniments of delirium.

Dr. COUPER CRIPPS quoted a case of a lady, 42 fourth pregnancy, ¼ gr. morphia, 2 inch os, 1/100 gr scopolamine. Went home and visited again in two hours; still quite quiet and comfortable; gave another injection of scopolamine and she was delivered in three or four pains after a quick labour. This was his only experience and it was a very successful case. He had to use chloroform in the second stage owing to the rapid progress of the labour.

Dr. A. S. CURRIE: Are scopolamine and hyoscine identical?—he thought not. The former was an allotrope of hyoscine and much safer to use. He preferred ergot and chloral, as advised by Playfair.

The PRESIDENT summarised the discussion, and

Dr. BLACKER, in reply, said he objected to the lay "boom" and the frequent use of these dangerous drugs by unqualified persons. Most of the statements advocating twilight sleep were untrue. He had no objection to scopolamine-morphine narcosis in proper hands, but it was not without risks and those behind the "boom" were always silent touching those risks.

[1] THE LANCET, 1917, ii., 897.
[2] Obstet. Soc. Trans., 1891, xxxiii., 203.

SOCIÉTÉ DE BIOLOGIE, PARIS.

AT a meeting of this society, held on Feb. 23rd, Dr. CHARLES RICHET was elected President and Dr. AUGUSTE PETTIT general secretary.

The following is a summary of the papers read.

M. GARNIER and J. REILLY.—Biliary Stasis in *Sp. icterohæmorrh.* Infection.

En dehors des cas rapidement mortels, la stase biliaire est constante; elle est surtout marquée quand la survie dépasse le 25e jour de la jaunisse; alors, les capillicules sont sinueux et dilatés. L'aspect est comparable à celui de l'ictère par rétention, différent par conséquent de celui de la plupart des ictères produits par d'autres microbes.

M. LEGER and PORRY.—New Trypanosomes in Monkeys.

L. et P. décrivent des trypanosomes nouveaux de la Guyane Française, l'un (*Tr. lesourdi*) chez un Atèle, l'autre (*Tr. devei*) chez un Midas.

P. REMLINGER.—On a Rabbit Naturally Refractory to Rabies.

ACHARD and BINET.—The Reflexes due to Ocular Compression.

La compression oculaire n'agit pas que sur le cœur. Elle ralentit la respiration jusqu'à provoquer l'apnée chez le chien. Elle diminue le pouls capillaire, comme le montre la piéthysmographie. Chez les trépanés, on constate aussi qu'elle diminue le pouls cérébral. Le frisson est diminué par la compression de l'œil. Il en est de même de certains tremblements. En particulier le tremblement basedowien peut être notablement diminué par ce moyen.

ACHARD and LEBLANC.—Renal Insufficiency in Cardiac Oliguria.

COSTA and TROISIER.—Immune Serum in Certain Spirochætal Infections.

C. et T. ont constaté dans leurs recherches que si le sérum des malades atteints de spirochétose ictéro-hémorragique dévie le complément en présence de l'antigène syphilitique et que si le sérum des syphilitiques contient des sensibilisatrices vis à vis de *Sp. ictéro-hémorragiæ*, on ne trouve pas, par contre, dans ce sérum, des substances immunisantes vis à vis du même spirochète.

G. LEO and E. VAUCHER.—Heliotherapy in Gunshot Wounds.

L'action bienfaisante du soleil peut s'expliquer par l'aspiration de la profondeur vers la superficie produite par la vasodilatation active des régions les plus superficielles, sans qu'il soit actuellement possible de préciser la profondeur limite de cette action vasodilatatrice. Simultanément la stérilisation de la plaie est obtenue très rapidement.

A. SEZARY.—Preparation of Hæmolytic Serums.

BELIN.—"Oxidotherapy" in the Treatment of Tetanus.

Résultats nets dans le tétanos chez le cheval, avec MnO_4K, voie intraveineuse; pourrait être employé chez l'homme en injection intramusculaire, intervenir tôt.

E. ZUNZ and P. GOVAERTS.—Antitryptic Index of the Blood Serum in the Wounded.

L'élévation du pouvoir antitrypsique peut faire défaut dans les septicémies et dans les états de collapsus circulatoire déterminés, dans les premières heures après une blessure, par l'hémorrhagie ou par l'infection.

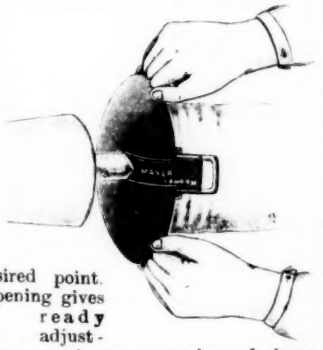
E. ZUNZ.—Alkaline Reserve of the Blood Serum.

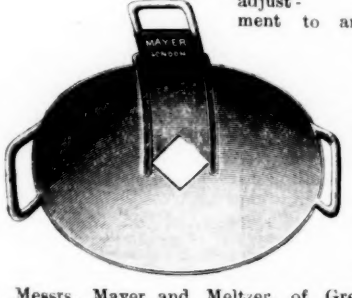
La teneur du sérum en réserve alcaline, évaluée d'après la methode de Marriott, reste normale chez les blessés, pourvu qu'il n'y ait ni fièvre ni infection notables. Le streptocoque et le *B. perfringens* interviennent presque toujours dans les infections qui entraînent l'acidose. La teneur du sérum en réserve alcaline fournit d'utiles indications pour le pronostic.

New Inventions.

AN AMPUTATION-FLAP RETRACTOR.

THE construction of this instrument, which I have designed, is shown in the illustrations. Its main objects are to give the maximum retraction of skin and muscle flaps in amputating and the easiest access to the bone to be divided. It is easily applied by one assistant, and when the operator is dividing the bone the assistant's hands are well out of the way—the bone can be divided without obstruction at the desired point. The diamond-shaped opening gives ready adjustment to any size of bone, and the whole is readily sterilisable in the Army pattern steriliser.





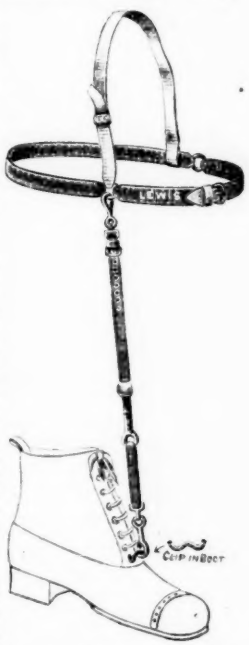
This form of retractor has been used in several hospitals in France for 18 months and has given satisfaction in every way.

Messrs. Mayer and Meltzer, of Great Portland-street, London, W., are the makers.

R. BUTE MACFIE,
Captain, R.A.M.C. (T.C.)

A NEW APPARATUS FOR THE TREATMENT OF FOOT-DROP.

THE apparatus figured herewith I have designed and am using for the correction of the foot-drop resulting from injuries of the sciatic or external popliteal nerves, or from any other cause of paralysis of dorsiflexion of the foot. The apparatus is an adaptation of one I have used for years in the correction of foot-drop in cases of poliomyelitis in children, whose strength cannot bear the added weight of steel supports.

In principle it consists of a piece of stout elastic, 4½ inches in length and about 5/8 inch in thickness, circular in cross section, though for children a thinner elastic should be used. What is actually used is known as a door "accumulator" spring. This is securely fastened above and below to a narrow leather strap, the lower one about 4 inches in length and ending in a spring hook. This spring hook is attached to a bow-shaped hook which is inserted into the two bottom lace holes of the boot, or if preferred it may be attached to a ring on a cross leather strap firmly sewn across the boot-upper into the welt of the sole. The strap fixed to the top end of the piece of elastic is carried up the thigh inside the trouser, about 25 inches in length, and is attached to a buckle on a short length of strap, which by a spring hook depends from a metal ring inserted in a leather belt worn above the hips and over the shirt. This buckle in the upper strap is necessary in order to vary the tension in the elastic pull on the foot. All this apparatus is worn beneath the trouser, so that all that is visible issuing below the bottom of the trouser is the spring hook attachment to the upper of the boot. To the back of the belt is attached a cross brace of stout webbing 4 feet in length, which is passed over the opposite shoulder, and threaded through the ring in the belt and fastened to a buckle on the brace, somewhat as in the ordinary Sam Browne belt. This cross brace should be not less than 1½ inches in width, and is made of stout inelastic webbing to buckle in front, so that the tension can be varied at will. The body belt and cross brace to which the elastic foot extension is attached are worn over the shirt and underneath the tunic or coat and waistcoat. Without a cross brace the pull of the elastic extension drags the belt too much downwards, the pull then being taken only by the hips, instead of by the hips and opposite shoulder combined, which is far better.

This apparatus has now stood the test of over two years of use in cases of sciatic nerve injuries, and patients wearing it are able to walk with very little or no limp. It can easily be fitted to any boot, and its weight and inconvenience of wearing are trifling. It is comparatively inexpensive, and with the lower strap of the same colour as the boot it is hardly visible. Another advantage of the apparatus is that it is equally well adapted for either foot, no alteration being necessary, and for double drop-foot, such as in cauda equina injuries, all that is necessary is to fix two elastic springs by their straps to the belt, one on each side, and two cross braces instead of one.

The apparatus is made by Mr. Henry Lewis, of Westmoreland-street, Marylebone, W., who has registered the design.

WILFRED HARRIS, M.D.Cantab., F.R.C.P.Lond.,
Captain, R.A.M.C.T.,
Neurologist, 3rd London General Hospital; Physician to St. Mary's Hospital, Paddington.

AT a meeting of the managers of the Edinburgh Royal Infirmary, held on Feb. 25th, it was reported that Miss Helen Martin Murray, formerly of Glen Arthur Lodge, Spylaw-road, latterly residing at Meadowbank House, Melrose, had bequeathed the residue of her estate, amounting to £60,000, for the provision of a convalescent home for discharged sailors and soldiers.

Reviews and Notices of Books.

The Control of the Drink Trade: A Contribution to National Efficiency. 1915–1917. By HENRY CARTER. With a Preface by Lord D'ABERNON. London: Longmans, Green, and Co. 1918. Pp. 323. Price 7*s.* 6*d.* net.

THIS book is a history of the legislative and administrative action taken in Great Britain with a view to regulating the liquor traffic in the abnormal circumstances created by the war. It deals with the period between the autumn of 1914 and the spring of 1917—i.e., from the outbreak of hostilities down to the time when, in order to conserve food-supplies, drastic restrictions on the output of liquor were imposed by the Food Controller. These latter restrictions, being purely emergency measures to meet the menace of the submarine campaign, form no part of the general policy of liquor control, and Mr. Carter has done wisely in bringing his survey of the subject to a conclusion at a date before their disturbing influence begins to operate. Chiefly, the book is concerned with the work of the Central Control Board (Liquor Traffic), which came into existence in the spring of 1915. The author has been a member of this Board for the last two years, so that he writes out of an extensive and intimate knowledge of the subject; and his book, accordingly, though he expressly disclaims for it the character of an official pronouncement, has an authoritative quality which would not attach to the work of an outside critic.

In the detailed account which he gives of the restrictive and constructive measures of the Control Board, Mr. Carter brings out very clearly the characteristics that distinguish these measures from previous experiments in drink control. As Lord D'Abernon points out in the preface which he has written for the book, they constitute the first attempt to deal with the drink trade solely on lines of national efficiency. And they represent also the first real effort to regulate the drinking habits of the people in accordance with the teachings of hygiene, as, for instance, by allotting the hours for the sale of liquor so as to minimise the risk of a continued action of alcohol on the body, by bringing the consumption of alcoholic beverages into relation with ordinary meal-times, by enforcing the dilution of spirits, and so on. Passing to the constructive work of the Board, Mr. Carter shows that the same principles have guided the experiments in the direct State management of public-houses which have been tried at Carlisle and in other smaller areas. A chapter of special interest deals with the industrial canteen movement, the initiation of which by the Control Board marks the first step in a reform of vital importance to the future of industrial life in this country. It is in consonance with the new tendencies thus manifest in its aims and methods that the Board should also adopt a more rigorous standard of evidence in estimating the effect of its activities on national sobriety. And in this connexion medical readers will note with interest and approval the large place given to the statistics of alcoholic mortality and disease in the chapters in which Mr Carter discusses the results of State control. The appeal to evidence of this sort is a new departure, and will commend itself to everyone who appreciates the fallacies and limitations of the statistics of public drunkenness, on which it has hitherto been the practice to rely almost exclusively as a test of the fluctuations of alcoholism. That there are regrettable lacunæ in these medical statistics—notably as regards the statistics of delirium tremens, which appear to have been regularly recorded only in a very few localities—indicates how little attention has been paid in the past to any but the police and licensing law aspects of the liquor problem.

We leave the book with the feeling that the Control Board, which has been fortunate in many things, has been fortunate also in its historian. Mr Carter has done his work in easy, lucid style, achieving with success the difficult task of giving a picture in which accuracy of detail is preserved without any sacrifice of the broad general effects. The book is adequately illustrated with charts and diagrams, and is furnished with appendices of official documents and with a full and well-arranged index—points of importance in a work which should be in much demand for purposes of reference.

Diseases of the Genito-Urinary Organs and the Kidneys. By ROBERT H. GREENE, M.D., Professor of Genito-urinary Surgery at the Fordham University, New York; and HARLOW BROOKS, M.D., Professor of Clinical Medicine, University and Bellevue Hospital Medical College. Fourth edition, thoroughly revised. London and Philadelphia: W. B. Saunders Company. 1917. Pp. 666. Price 24*s.* net.

THE fact that Professor Greene's comprehensive book has now reached its fourth edition is sufficient evidence of its popularity. The book is well got up and profusely illustrated; the pictures demonstrating the anatomy of the genito-urinary tract and also those of pathological specimens are exceedingly well done, the selection of typical examples of the latter being excellent. The diagrammatic drawings of the details of operations as carried out by the authors are also very good, and so numerous that it is quite easy to follow the various stages of each operation. If there is any complaint to be made in connexion with the illustrations it relates to the cystoscopic pictures of the bladder and the endoscopic views of the urethra. Uncoloured pictures of the interior of the bladder and the urethra cannot give an adequate idea of the conditions seen, and to be of practical value a large number of coloured illustrations are necessary to demonstrate the many points needed to help the practitioner in diagnosis. But even a few coloured typical pictures would be of more value than those given.

In regard to methods of diagnosis and treatment the authors have set out their own, giving the theoretical considerations for adopting them in preference to others without entering into long discussions on controversial points. In this way the book has not become unduly large. Even so, perhaps too much attention has been devoted to the details of surgical operations. These might have been limited with advantage and more space allotted to the general principles of operative procedure and to differential diagnosis. Again, it is surprising that so little mention is made of the irrigating cystoscope and the aero-urethroscope, which have practically replaced all other such instruments in this country. On the whole, however, the reader is the gainer from the personal bias of the book, which embodies the actual experiences of experts.

Allen's Commercial Organic Analysis. Volume IX. Fourth edition, entirely rewritten. Edited by W. A. DAVIS, B.Sc., A.C.G.I. London: J. and A. Churchill. 1917. Pp. 836. Price 30*s.*

AS explained in the preface this is a supplementary volume to the series which brings the text, especially that of the earlier volumes, up to date. It includes also a complete general index to the subject matter of the whole work. A glance at the list of authors mentioned in the index of them gives a good idea of the authoritative character of the analytical propaganda. The subjects of medical interest in this supplement include the alkaloids, animal bases and acids, milk products, and meat and meat products, all of which have received special attention of late in regard to analysis and valuation. This volume adds considerably to the value of the whole issue, and chemists will, in general, appreciate the series as a source of reference in analytical (organic) procedure.

A Manual of Physics. By HUGH C. H. CANDY, B.A., B.Sc. Second edition, enlarged. London: Cassell and Co. Pp. 451. Price 7*s.* 6*d.* net.

THE new edition of this manual, which is intended by the author to meet the needs of medical students, confirms the favourable opinion which we formed on its first appearance. Mr. Candy makes frequent reference to the application of physics to medicine, and the student need not feel that he is working in a water-tight compartment with no connexion with his later subjects of study. The sections on general physics and sound may possibly not be quite sufficient for the higher grade first medical examinations, but it is no small merit for the book to bear the stamp of a writer who loves his subject for its own sake and who presents it in an accurate and attractive form.

THE LANCET.

LONDON: SATURDAY, MARCH 16, 1918.

The Doctor and the Airman.

THE mastery of the air is becoming a matter of supreme importance in modern warfare and can only be reached by fit men specially selected for the task. The Air Force will receive all sympathy in having come upon the scene with its medical requirements at a time when the resources of the medical profession are already taxed by the demands of the two senior services, but this misfortune may well be made good by the keenness and open-mindedness of which the discussion held last Monday at the Medical Society of London gives a good illustration. At this meeting, on the selection of candidates for the Air Service, Surgeon H. GRAEME ANDERSON read the paper which we print in full in our present issue, and a lively discussion followed in which the heads of the Naval and Military Services took part, as well as a number of the members of the Advisory Medical Committee to the Air Council, whose names we give on p. 419. Three broad lines of thought ran through the discussion: the first dealing with the selection of candidates, the second with their grading after selection, and the third with their adaptation to their peculiar environment. The points to be aimed at in the equipment of the airman for his task are as yet surmised rather than known, but much work is being done upon them. In the present experimental stage the survey of the candidate must obviously be as complete as possible, no points may be overlooked and nothing may be omitted in the routine examination which might turn out to give a useful clue in selection. It is true that the examination, as proposed by Surgeon ANDERSON, constitutes in itself no mean test of physical endurance both for examiner and examinee. But experience is not yet available in any country to justify a short cut. Surgeon-General T. H. GOODWIN'S personal experience of America shows that the position is the same there, although, as Major H. C. T. LANGDON indicated in the discussion, given our relatively scanty material, selection must be conducted on stricter lines on this side the Atlantic, and border-line cases accepted as competent for special duties in an aviation force. This is hardly a drawback at the present stage, when, although the existence of a particular flying temperament is admitted, precise definition of its qualities eludes physical terms. Major MARTIN FLACK'S work affords, however, considerable hope that some simple, even empirical, physiological test or series of tests may be found to answer all of the questions which a more prolonged and complicated examination can do. The physiologist is here in his right relation to medicine, and this is the highly important point which has escaped many minds priding themselves upon scientific exactness.

Granted the necessity of a certain minimum standard of fitness for every air candidate, the demands on the trained airman vary enormously with the class of work to which he is put—that is the significance of the remark above, alluding to special duties in connexion with an aviation force. Probably in no service are the limits so extreme or grading more essential. Flying on a bombing plane under continuous fire at low altitudes, or for long distances at a vast height with oxygen pressure reduced to one-half, implies a measure of physical endurance vastly different from that of low altitude flying or reconnaissance work. Of the 10 per cent. of trainees who fall out in the routine course of instruction it is believed that many might still qualify for certain grades if sent to a special school for the purpose. It should not be too readily assumed that a particular disability precludes a candidate from entrance. Dr. F. J. POYNTON related at the debate before the Medical Society an instance of a typical spoiled boy, too delicate from youth up to attend school or college, who is now an expert bombing-flyer, and many lads of this pattern have surprised their friends, and perhaps themselves, by their adaptability, to put the virtues of courage and resource at their lowest term. The suggestion has been made that no man who has once injured his head should be given a second chance, but the temperament of the recruit which leads him into situations where he gets concussed is the highest known qualification for flying. Probably grading should be at first provisional, with opportunity afforded for regrading at the end of the period of training.

To select and to grade aright the doctor must live with his man, and this is the situation for which we have already contended in these columns. Only by constant intercourse with those in his charge can the doctor learn what are the standards of the normal body in regard to the environment of the airman. As the mechanic reports on the engine so must the doctor be prepared to assess the powers of the human machine and specify the work for which it is suitable. The future of the Air Medical Service lies, as Surgeon-General ROLLESTON expressed it, on physiological waters. The doctor must even be prepared to fly with his man as well as to observe him both before and after the flight. The psychological factor, or, in the more direct diction of the Air Service (which punctuated the debate at the Medical Society), the man's "guts," can in no branch of medicine be of greater importance, and for a right understanding of his temperament sympathy with the airman is as essential as technical knowledge. Some curious points have already emerged from this close association of doctor and trainee. It has been ascertained that really good pilots are almost invariably bad sailors. They are also very susceptible to alcohol. Airmen are, as a class, abstemious, but the effect of alcohol on flying is known to be very subtle. The American rule of forbidding altogether whisky and liqueurs to the airman is worthy of imitation, leaving to the test of further experience the consumption of beer and light wine after flying. The doctor in close association with the airman will

gradually gain insight into the problems of fatigue—how it arises and how it may best be avoided in flying. The staff over which Fleet-Surgeon MUNDAY presides is alert to all these matters, and the prospect is bright for the rapid solution of many of the new problems presented by the Air Medical Service.

Medical Witnesses and the Question of Privilege.

A RECENT trial in the High Court, one of the points at issue being whether a deceased person in insuring his life had concealed from the insurance company the facts that he suffered from insomnia and was in the habit of taking veronal, has been made prominent owing to certain questions asked of a medical witness, and to the absence of protection of the witness from the enforced revelation of knowledge acquired in a professional capacity. The publicity given to the case in the newspapers renders it unnecessary for us to go into the facts in any detail, while it has been responsible for reminding the public of the question of privilege for medical witnesses without making in the least clear what the actual position is under which that privilege is claimed. It would seem that the particular circumstances in which the evidence was given, and the fact that the judge insisted upon the medical witness answering the questions of counsel despite his position of professional confidence, do not involve any notable hardship upon the practitioner or upon his patient, which makes the case a good instance for discussion.

That the claim of privilege has been denied to the medical profession is well known, though many judges have made a rule of protecting in all reasonable positions the medical witness who claimed on professional grounds the privilege of not replying to questions. In TAYLOR on Evidence the matter is stated thus: "The privilege (he is speaking of that enjoyed by the legal profession), though perhaps the policy of such restriction is questionable, does not extend to other persons though made under terms of the closest secrecy. Thus medical men and clergymen are bound to disclose any information which by acting in their professional capacity they have confidentially acquired." Now the privilege accorded exclusively to the legal profession has been explained, if not wholly justified, by Lord BROUGHAM, who puts the matter thus: "The foundation of this rule is not on account of any particular importance which the law attributes to the business of legal professors, or any particular disposition to afford them protection. But it is out of regard to the interests of justice, which cannot be upholden, and to the administration of justice, which cannot go on without the aid of men skilled in jurisprudence, in the practice of the courts, and in those matters affecting rights and obligations which form the subject of all judicial proceedings." In another case Lord BROUGHAM said that "if such communications were not protected, no man would dare to consult a professional adviser with a view to his defence, or to the enforcement of his rights, and no man could safely come into a court either to obtain redress or to defend himself." This last utterance was made in 1833, and in the same year Lord BROUGHAM showed that though he had given effect to the law as it stood and had enunciated the principles on which it was based, he was not necessarily in favour of leaving it unmodified, for in the case of GREENOUGH *v.* GASKELL, after stating the limitation of the privilege to lawyers, he observed: "Certainly it may not be very easy to discover why a like privilege has been refused to others, especially to medical advisers." A similar expression, conveying in plainer terms regret that the protection afforded by the law was not extended, is to be found in a judgment of Mr. Justice BULLER delivered as long ago as 1792. Quotations have been made from reports of cases tried many years ago rather than from others of more recent date in order to illustrate the length of time during which the hardship and, in not infrequent cases, the injustice of denying privilege as witnesses to medical practitioners have not only been felt by them but have been realised on the bench. It is certain that Bills directly affecting the medical profession in important manners will soon be laid before the House of Commons, and the medical profession should take steps to ensure that in such measures a clause is introduced to secure consideration being given to a very important matter. The public convenience may at any time require a medical witness to be able to refuse to answer interrogatories when the information sought from him has been acquired in the course of professional work. We believe this is the view that would be taken by our legislators if the question were squarely debated in the course of a Bill for the institution of a Ministry of Health, and it is easy to see that the point might be quite within the scope of debate.

In the trial to which we have referred the circumstances in which the medical evidence in question was given render it doubtful whether any privilege likely to be accorded to medical witnesses would have allowed the information to be withheld. In the first place, as we understand the matter, the witness objected to being obliged to answer questions arising mainly out of a confidential report made by him to an insurance company on the subject of his patient's habits and condition, which were of material importance if the policy sought for were to be granted. No doubt the witness had always regarded such a report as one the contents of which would remain a secret between himself and the company, and it was to this confidential aspect of the transaction to which in some measure he referred. The judge is, however, reported as having warned the witness against refusing to answer in these terms, "I shall not hesitate, even though the witness be a doctor, to make the witness feel the power of the law"; from which it seems clear that the claims of the witness not to reply had been made, in part at least, on the ground that he was a medical man, asked to give evidence as to knowledge acquired in a professional capacity. The reasons against extending anything in the nature of a privilege specially attaching to a medical witness to one giving evidence on such an

occasion are fairly obvious. He is not in the position of one asked to divulge secrets which have come into his possession in the practice of his profession as a medical man when treating the sick, or in circumstances and upon an occasion when their revelation to anyone else was not contemplated by either party. A policy of life assurance is a contract entered into by the company and the assured for the benefit of both the parties to it, the terms of which are dependent upon a frank and authoritative statement of the physical condition of the latter. It is, in short, a business transaction in which medical men are called in to assist because that is the most business-like way of ascertaining what those physical conditions are. If once the accuracy of statements made by anyone in such a transaction is impugned, full investigation is necessary not only in the interest of the parties concerned but of the public, and not less in the interest of any medical man who has been associated with the matter. If he has voluntarily made a report or given any information, whether primarily of a confidential nature or not, and the contract which he knew would be based upon it is attacked in a court of law, he can hardly complain if he is given the opportunity to prove his own accuracy or to explain an error, or an apparent inconsistency between two statements affecting the same subject. Nor can his patient, who in the case under discussion was dead, complain, for it was in his interest that the contract was made, and it is to his interest that it should be upheld. It must, however, be part of his case that it was a good contract honestly entered into.

There are countries in which a very extensive privilege is accorded to knowledge obtained by medical men in the exercise of their profession—in which, indeed, they are even forbidden to reveal in courts of law facts so ascertained. The fullest extension of such privilege in their favour may be desired by many members of the medical profession in this country, but, strong in favour as the arguments are, other aspects of the case require consideration. Conditions of universal privilege and enforced silence may have their drawbacks. The good citizen may have the duty of protecting the public, and the professional man may at times need liberty to protect his own reputation, although a modified form of privilege consistent with the interests of justice and the maintenance of truth in the courts of law would be welcomed.

THE Ministry of Food desires us to say with reference to the regulations quoted in our last week's leading article (p. 376), concerning compulsory rations and concessions in the rationing of invalids, that while most of these regulations were suggested in a Memorandum presented to the Ministry of Food by the Committee of Reference of the Royal Colleges of Physicians of London and of Surgeons of England and the Central Medical War Committee, the complaints "cœliac disease" and "pancreatic insufficiency" were not included in that Memorandum. They were added at the instance of the scientific adviser after consultation with one of the medical referees to the Ministry of Food.

Annotations.

"Ne quid nimis."

GREAT MEDICAL LIBRARIES.

SPEAKING at a dinner given (before the days of strict rationing) in honour of the eminence among his fellow librarians of Mr. J. Y. W. MacAlister, secretary and consulting librarian of the Royal Society of Medicine, Sir William Osler referred pleasantly to Mr. MacAlister's work as specially displayed in the control of a medical library. The subject of Sir William Osler's eulogy is what in America would be called a "merger," for has he not been mainly instrumental in merging many societies into one at the Royal Society of Medicine, and especially in merging their scattered and specialised collections of books into one great collection, now finely housed at No. 1, Wimpole-street? Concentration of this kind in libraries leads to the existence of a multitude of duplicates of individual works. For instance, we can imagine that when more than a dozen—perhaps even twenty—small collections of scientific books were pooled, the new collection thus formed contained from ten to twenty copies of Gray's "Anatomy" or Taylor's "Medicine." The newly-formed library, indeed, is rich in duplicates, and aims at possessing more; its chief function is thus necessarily that of a lending library, for it can afford to let books remain "out" for long periods without in any way inconveniencing readers. Lending out is a difficult system according to many librarians, for by a debased species of "merger" valuable works out on loan have a way of becoming part of private collections, in defiance of fines, whips requesting the return of a given book, or threats of police proceedings. It was possibly owing to certain immoralities of this kind that the British Museum Library ceased many years ago to lend out rare volumes. But from the Library of the Royal Society of Medicine the disappearance of books in this way is unknown, we believe. The lending system, therefore, may be supposed to work very smoothly at the society's library. Books, however, cannot all be in duplicate: there are for the bibliophile's delight volumes of which few specimens exist, often scattered in different collections. Such scarce books cannot conveniently be lent out, especially, as might happen, when more than one person wishes to refer to them concurrently. They should be found in a reference library which keeps all its treasures close at hand; they are, when medicine is in question, to be found in the Library of the Royal College of Surgeons of England, where the collection, almost devoid of duplicates, amounts at present to some 70,000 volumes, of which about 2000 contain 20,000 or 30,000 pamphlets bound in batches and all fully catalogued. The almost total absence of duplicates probably renders this great library much larger in the true sense—not the numerical sense—than any of its important rivals. This question of numbers, however, matters little in thinking of the Library of the Royal Society of Medicine in relation to that of the College. The essential point is that, as managed and constituted, both libraries are complementary the one to the other, and consequently of more use to the medical profession than if the medical man depended only on one lending collection or only on one collection of localised books. Probably no profession or calling in Great Britain is better supplied with the literature of its craft than the

medical. The libraries of the Royal Colleges of Physicians and Surgeons and of the Royal Society of Medicine may be said, when taken together, to cover the whole—or nearly the whole—field of medical literature. In some directions they even cover a wider field than does the lavishly State-supported library of the Surgeon-General's Department at Washington. Here again, however, comparative estimates are unnecessary. Our American Allies have certainly got a magnificent library, the index or catalogue of which is a monument of bibliography as useful to English scholars and librarians as to their American congeners. Among the millions of English-speaking people there is plenty of room for two great medical library systems—those, namely, of Washington and London. They form no mean portion of those national cultural resources which deserve reconsideration on the eve, let us hope, of a period of reconstruction.

PSEUDO-TABES OF TRAUMATIC ORIGIN.

THAT a traumatic lesion of the cauda equina may simulate in its clinical aspects a sclerosis of the posterior columns is exemplified in a case recently published by Dr. A. Mendicini, professor of neuro-pathology in the University of Rome.[1]

The patient, a soldier, presented a syndrome characterised by amyosthenia of the legs, more marked on the right side, associated with hypotonia of the muscles, abolition of the Achillar reflexes and the left knee-jerk, Romberg's sign, ataxic gait, lightning pains, and intermittent paræsthesia, with disturbance of sensation in the regions of the fifth lumbar and all the sacral nerves on both sides, but partly also of the third and fourth right and fourth left lumbar, together with derangement of the functions of micturition and defæcation. These phenomena followed a wound by shell splinters of the lower lumbar vertebræ, which at its onset caused a complete paralysis. The resemblance to tabes was so marked that the doubt arose whether the patient might not have been the subject of a latent form of locomotor ataxy, but against this supposition it was ascertained that previous to the injury he had no symptoms referable to the nervous system; moreover, the Argyll-Robertson sign was absent. The seat of the injury and radiographic examination pointed, on the other hand, to a lesion of the cauda equina, the fibres of which were either contused by the fragments of shell, which were numerous, although it is more probable that these produced an endothecal hæmorrhage. To this and the shock of the wound itself the initial paraplegia was certainly due, which passed off in about three weeks owing to gradual absorption of the blood extravasated into the meningeal sac. In fact, the irritative symptoms (retention of urine, pains, and painful priapism) became gradually lessened without giving place to noticeable paralytic phenomena. The progressive improvement of the patient justified the exclusion of a secondary inflammatory process of the meninges. The pathology of the case therefore resolves itself into one of peripheral radicular pseudo-tabes, which differs from the classic neuro-tabes in the topography of the sensory changes and in the presence of disturbances in the sphincters.

Dr. Mendicini's patient had Romberg's phenomenon and ataxic gait; when in bed, however, or seated he could move the legs correctly into any position and retained the sense of position except in most of the toes. This fact is of some importance as showing that only the paths proceeding from the terminal segments of the lower limbs were impervious to the transmission of deep sensation; it explains the Romberg sign and disturbance of gait, and demonstrates that if Romberg's phenomenon is met with chiefly in relation to degeneration of the posterior roots it may also be caused by simple plantar anæsthesia. On the other hand, the retention in this patient of deep sensibility in the proximal part of the lower limbs gives the reason of the absence of static and dynamic ataxy in the recumbent or sitting posture. In tabes, on the contrary, an ataxic gait associated with Romberg's sign is never met with in conjunction with absolute static and dynamic integrity of the legs in the supine or sitting position, not even in cases of tabes inferior in which the lesion is limited at the onset to the sacral or last lumbar roots.

[1] Il Policlinico, Medical Section, Feb. 1st, 1918.

THE SCHOOLS FOR BLIND, DEAF, AND DEFECTIVE CHILDREN.

THE Board of Education have recognised that some assistance should be given forthwith to local education authorities and to the managers of voluntary institutions to assist them in meeting the additional charges now being incurred in respect of teachers' salaries and the increased cost of food. They have accordingly decided, as an interim arrangement, to increase the grants payable under the regulations for these special schools. The Regulations which came into operation on April 1st, 1917, are modified: the grant payable each year for a certified school for blind or deaf children will be (1) at the rate of £8 10s. for each unit of average attendance in a certified day school; (2) at the rate of £16 10s. for each unit of average attendance in a certified boarding school. The grant payable each year for a certified school for defective or epileptic children will be (1) at the rate of £7 10s. for each unit of average attendance in a certified day school; (2) at the rate of £15 10s. for each unit of average attendance in a certified boarding school. It has also been decided to increase by £1 the grants payable to open-air schools under Part II. of the Medical Grant Regulations. In an introductory note to the circular officially announcing the modifications the Board says:—

The improvement and, indeed, the maintenance, of the efficiency of special schools, as of other types of school, must in a great measure depend upon the provision of a suitably qualified staff of teachers. Such a staff can only be obtained and retained if adequate salaries are paid, and the Board rely on the school authorities to take the opportunity afforded by the increased grants to provide adequate salaries in special schools, regard being had to the special character of the duties required and the rates of salary payable to teachers of a similar standing in ordinary elementary schools.

We trust that the school authorities will see their way to discharging the responsibility towards their teachers thus placed upon them.

THE WATER-SOLUBLE ACCESSORY IN YEAST.

AN interesting investigation on accessory food substances has for some time past been in progress in the bio-chemical laboratory of the Cancer Hospital Research Institute, in which the author, Mr. J. C. Drummond, set out to isolate and identify the dietary factor B. The results appear in a paper published in the December number of the *Bio-Chemical Journal*. Dietary factor B is the water-soluble accessory substance as distinct from A, the fat-soluble substance. It is probable that the so-called "antineuritic vitamine" is identical with the water-soluble factor B. Little progress seems to have been made in elucidating the exact chemical nature of this substance, although some of its properties are well known. The chief attempts to isolate the substance have been made with yeast extracts, but the difficulty has been to recover the vitamine as such after the raw material has been through fractionation processes carried out on well-known lines. Mr. Drummond says it is probable that the loss which

occurs during the fractionation of extracts containing the antineuritic substance or the water-soluble, growth-promoting substance is due to the readiness with which these substances are adsorbed from solution by precipitates. Further proof of this appears to be that, whenever in the course of the fractionation, precipitation is employed, the precipitate, particularly if bulky and flocculent in nature, will usually carry down the majority, if not all, of the active substance from solution. It is naturally a very difficult matter to trace the growth-promoting principle during fractionation, because minute traces of that substance do not always demonstrate their presence by causing an appreciable increase in the body-weight of the experimental animal; whereas, such extracts are often sufficient to cause a decided improvement in the condition of a polyneuritic pigeon. Although no definite chemical identity has been established, the evidence so far obtained is, in Mr. Drummond's opinion, less favourable than ever to the adoption of the word "vitamine" coined by Funk. A further insight into the chemical nature of these substances seems to be required before the appellation vitamine can be scientifically justified. Mr. Drummond sums up as follows: (1) Experimental evidence is given which demonstrates that certain of the properties possessed by the antineuritic substance and the water-soluble accessory growth factor B are very similar; (2) this fact supports the view that the two substances are identical; and (3) the repeated failures to isolate substances of this class in the pure condition are attributed more to the fact that they are readily removed from solution in the adsorbed condition by precipitates than to their reputed instability.

NEW DIRECTIONS FOR THE ANTI-VENEREAL CAMPAIGN.

As in other campaigns, the strategic forces directed against venereal diseases are finding it inevitable to make new lines of attack to support their earlier successes. The speakers at the meeting of the National Council for Combating Venereal Diseases on Tuesday last indicated four different directions in which minor attacks are desirable. Lady Barrett asked for further provision of beds for the care of infected pregnant women, the majority of whom are, in her experience, married women infected by their husbands during a period of leave. Mrs. Burge desired the establishment in country or suburbs of small hospital homes for young children infected through assault or accidental contact. Dr. A. F. Tredgold pointed out the large part played in the dissemination of venereal diseases by girls too feeble-minded to realise their danger or to profit by experience, and the urgent necessity of putting into force the provisions of the Mental Deficiency Act for their segregation. Dr. W. G. Savage spoke of the special difficulties of the venereal campaign in a sparsely populated district where, since it was almost impossible for the patient to visit the clinic, the clinical officer should perambulate the county, combining, if need be, other public health activities with his anti-venereal work. In two of these directions the National Council has already pressed the need for action on the officials concerned, and we congratulate the Council on its evident intention to see that the campaign, to which it bears the relation of an advisory committee, is conducted on broad lines to a successful issue.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

A Vaccine for Malta Fever.

WE owe to M. Vincent, médecin-inspecteur and professor at the Val-de-Grâce, the discovery of the antityphoid vaccine in most general use, and the same worker has recently communicated to the Academy of Science a method for preparing another vaccine likely to be of material aid in abolishing Malta fever. He has succeeded in completely immunising goats, by first employing sterilised cultures, and following these up by injecting virulent living cultures of the *M. melitensis* at intervals of five or six days. Goats thus protected were inoculated with pure cultures of the coccus and fed upon food soaked in the same, and proved completely refractory for a period not yet determined but probably covering their whole life. Nearly 300 animals have been tested and the result has been convincing whatever the age of the goat. Pregnant goats thus immunised have borne young equally refractory. It is anticipated that the result will be the disappearance of Malta fever from France in the same way that anthrax has been stamped out among sheep.

Differences in Resonance at the Pulmonary Apices.

Dr. Bezançon showed in 1907 that the percussion note at the apex of the right lung is flatter than at the left, and that the difference is attended with a marked diminution of the vesicular murmur. The sign has generally been regarded as proving the existence of old and cicatrised tuberculous lesions. The necessities of war have led to a further careful study of its value, and Dr. Sergent has already shown how elusive are the signs of incipient tuberculosis and how often their significance is exaggerated. MM. Ramond and François have now brought forward at the Medical Society of Hospitals good reasons for concluding that Bezançon's sign has no pathological significance, and that the right pulmonary apex is normally less ventilated than the left, due apparently to a less extensive movement of the diaphragm, as it overlies the liver.

Aeroplanes for the Wounded.

Dr. Chassaing, who is both médecin-major and Parliamentary deputy, suggests the employment of aeroplanes for the removal of the wounded from the field. With the help of an old machine placed at his disposal by the Service de Santé Militaire he has shown that removal in this way is practicable, and has special advantages in cases of abdominal wounds involving the viscera where shaking involves danger of general peritonitis and hæmorrhage. Smooth landing, which is always a delicate manœuvre, is, of course, the difficulty. Dr. Chassaing's own experience has, however, led him to urge that the method should become general. The objections are obvious. Aeroplanes carrying wounded are not less exposed than others to barrage fire, and the large number of aeroplanes required after an important action would be difficult to find. The idea is not a new one. It was seriously suggested in 1913 by an administrative official, M. Ch. Julliot, and three years earlier by Dr. de Mooy, a major in the Dutch Medical Corps. M. Julliot foresaw the difficulty of collecting large numbers of wounded by this means after a great offensive, but laid special stress on the part which aeroplanes might play in locating wounded men overlooked in hollows and corners of the ground, who might be instructed how to attract the aviator's attention by a prearranged sign, such as the spreading of a large handkerchief on their body.

March 8th.

TUBERCULOSIS.

The Discharged Tuberculous Soldier.

IN reply to a question in the House of Commons as to whether in future the cost of treatment of discharged and disabled men suffering from tuberculosis would be entirely borne by the Ministry of Pensions, Sir A. Griffith-Boscawen, Parliamentary Secretary to the Ministry of Pensions, stated as follows:—

I have no power under the terms of the Royal Warrant to pay the expenses of treatment of these men so far as provision is otherwise made for them. Under the National

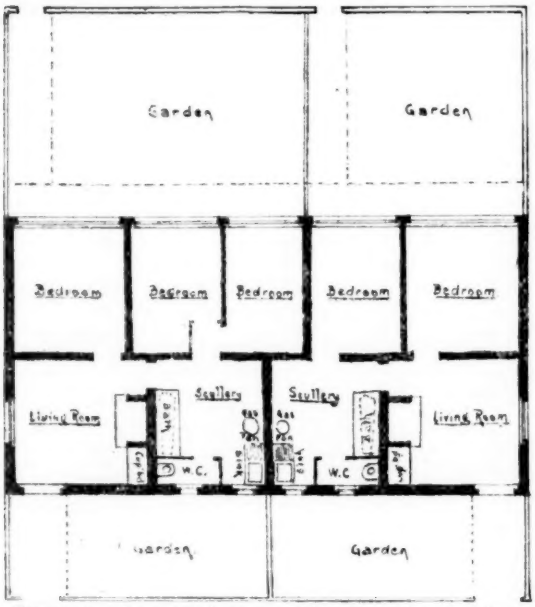
insurance Acts the provision of treatment for cases of tuberculosis in general falls upon the Insurance Commissioners and the Insurance Committees. I have, however, made arrangements to defray the cost of treatment in certain classes of cases—namely, advanced cases of the disease and early cases sent for prolonged treatment and training to farm colonies, and, in addition, I have assisted the Insurance authorities to provide additional grants-in-aid so as to secure preferential treatment generally for discharged men.

The statement will help to clear up any ambiguity still attaching to a much-discussed theme.

A Town Bungalow Scheme.

Dr. J. T. Neech, medical officer of health of Halifax, has submitted for the consideration of his health committee a scheme for housing consumptive families. Starting from the fact that certain families are particularly prone to the disease, and that sleeping in ill-ventilated and badly lighted rooms tends to increase the susceptibility and render the soil more responsive to the reception of the seed, he recommends that susceptible cases should be given open-air treatment before, and not after they have developed the disease. This can, he thinks, best be realised by submitting whole families to open-air treatment. He writes :—

I suggest that a suitable site be chosen, well sheltered from cold winds, and within easy access of work and school. Upon this site bungalows should be built in



Ground-plan of proposed bungalows with open-air bedrooms for the treatment of tuberculosis. Scale 16 ft. to 1 in.

pairs, each with a garden, and consisting of a living room and a back kitchen, with pavilion bedrooms on the south side. Allowing five such rooms to each pair, there would be three sleeping pavilions to one bungalow and two to the other, thus serving both small and larger families. If built on a standard pattern of concrete slabs the cost under normal conditions need not be great. I would suggest a trial of this method, on a small scale at first, say five pairs to begin with. If successful and extension proved desirable a resident nurse could be appointed to attend to any sick cases and see that open-air treatment was properly carried out.

Suitable families should be selected for residence, of which one or more members should have had sanatorium treatment. The family, as a whole, must undertake to carry out strict open-air treatment. Additional bedding and even food could be provided in necessitous cases. The scheme would not only remove consumptives from congested areas into healthy surroundings, but give opportunity for prolonged treatment and for the safeguarding of other members of the family.

We reproduce Dr. Neech's ground-plan of the bungalows, and commend his suggestion to the consideration of enlightened municipalities.

A Colony Scheme for Ex-Service Men.

Mr. Thomas Denman, clerk to the Brighton Insurance Committee, has worked out a detailed scheme[1] for the treatment of men discharged from the services on account of tuberculosis. In essence the scheme involves the foundation of village colonies for agricultural and horticultural pursuits in the main self-supporting but administered by the Ministry of Pensions. Medical discipline is assumed, but room found for the amenities of life, and each colony is to comprise cottages for soldiers with families, dormitories for single patients, and accommodation for temporary residential treatment. The administrative side of such a scheme is discussed with some insight into the actual difficulties, and the brochure may be widely read with advantage by those who are attempting to grapple with a vast problem.

An American Tuberculosis Bulletin.

The city of Chicago has begun to issue a monthly bulletin in connexion with its Municipal Tuberculosis Sanitarium and dispensary work in association therewith. The first two numbers of this bulletin are before us. The motto of the bulletin runs: "Tuberculosis is contagious—Tuberculosis is preventable—Tuberculosis is curable. Within natural limitations each community can determine its own tubercular morbidity." The first article is an interesting account of the adoption of a full-time dispensary system. In 1915 21 979 patients were treated in the dispensaries; in the following year 24 016, the dispensaries being so crowded that some change became essential. It was decided to open the dispensaries every week-day, and instead of the existing staff of 37 part-time physicians, to appoint 18 full-time officers. On July 23rd, 1917, the dispensaries were open for full-time service, and instead of the crowded clinics, in which 60 to 150 patients congregated in small dispensaries, to be cared for inside of three hours, the dispensary load was at once spread over the entire week, so that each patient could secure ample attention from the physician and nurse, with the result stated as follows :—

Both nurses and patients are most enthusiastic over the change in the dispensary system. The patients being more evenly distributed, the doctors and nurses are able to give to each the individual attention which was impossible under the old plan. It is much easier to get the patients into the dispensary when they do not have to come at a stated hour, and as there is now no delay in seeing the physician the dispensary has more the appearance of a private physician's office than of a free dispensary.

A survey of the eight square miles in the heart of the city of Chicago showed over 14,000 cases of tuberculosis which had never been to the dispensary or reported to the Health Department. The enterprise of Chicago in founding a full-time tuberculosis service and a municipal journal may well excite emulation.

Tuberculosis Society.

A meeting of this society will be held at the house of the Royal Society of Medicine on Monday, March 25th, at 5 P.M., when a discussion on "The Need of Hospitals for Advanced Cases of Tuberculosis" will be opened by Dr. Halliday Sutherland and Mr. Herbert Woolcombe (London Charity Organisation Society). The meeting is open to visitors.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS.

THE following subscriptions to the Fund have been received during the week ending March 11th :—

	£	s.	d.
Dr. Sidney P. Phillips ...	5	5	0
Mr. George W. Thompson	10	10	0
Mr. Leonard Stearn ...	1	1	0
Mrs. Mary Stringer, M.P.S.	1	1	0
Dr. Reginald J. Hanbury	2	2	0
Dr. J. B. Naden	3	0	0
Mr. A. Wertheimer (per Dr. Sidney Phillips) ...	10	0	0
Dr. Alfred Cox*	1	1	0
Dr. A. Hugh Thompson	2	2	0

* Monthly subscription during the war.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

[1] The Discharged Consumptive Soldier. London: John Bale, Sons, and Danielsson. Pp. 40. Price 1s.

Correspondence.

"Audi alteram partem."

SERUM SICKNESS AND VAGOTONIA.

To the Editor of THE LANCET.

SIR,—Dr. E. W. Goodall, in his interesting article in your issues of March 2nd and 9th upon serum sickness, with the associated condition of urticaria, makes no allusion to a condition which may throw some light upon the so-called idiosyncrasies in reaction—namely, vagotonia. We are as yet rather shy in this country of most clinical conditions which do not present clear-cut or uniform features, which, like vagotonia, meaning a heightened sensitivity of the vagus system, is rather a type of bodily make-up than a disease. It is far otherwise, however, on the continent, where the studies of Eppinger and Hess upon this state have attracted much attention, and in America, as the present references in the current journals demonstrate. The particular readiness with which urticaria may develop in these cases is well known. Other conditions met with in "vagotonics" are a tendency to asthma, intestinal instability, eosinophilia, sometimes bradycardia, a ready flow of saliva, and gastric disturbances on occasion. One cannot enter into a detailed account of this condition here, a state which in itself resembles more or less that unfashionable entity, a diathesis. Significant of the suggestiveness of the vagal basis for vagotonia is the fact that drugs such as belladonna, which lessens vagal action, or, equally, drugs such as adrenalin, which activate the sympathetic system and so alter the autonomic balance, have markedly beneficial clinical effects. The writer can speak from experience of this. In certain of Dr. Goodall's cited cases, where an unusually vigorous reaction to the serum occurred, it is easy to recognise this vagotonic state. Thus (p. 362) two cases, Miss A. and the next, both showed pronounced bronchial and intestinal irritation; similarly, in a third case (same page) Dr. I. N., actual asthma was induced. Accepting the influence of the vagotonic state, it can be readily understood why unfavourable serum symptoms occurred in the American hay fever and asthmatic cases quoted (p. 327); Dr. Goodall, in fact, allows that "many of them (severe reactive cases) have exhibited the peculiarity of an asthmatic idiosyncrasy *before* they have been injected with serum." Might one ask whether any of these cases received either before injection (as a preventive measure), or afterwards, when severe symptoms arose (as a remedial measure), either atropine or adrenalin, and, if so, did success result? Dr. Goodall says: "More facts are wanted ..... of the conditions under which they (i.e., the rashes) arise." Would not a study of the vagotonic diathesis in this relationship furnish some suggestive data?

I am, Sir, yours faithfully,

Manchester, March 11th, 1918. C. EDGAR LEA.

"NITROUS OXIDE CUM CHLOROFORM."

To the Editor of THE LANCET.

SIR,—In the *British Dental Journal* for December, 1917, there appears an original communication from Mr. Hugh M. Biggs, L.D S. Glasg., together with a letter from Dr. Dudley W. Buxton on the said communication. As I have used nitrous oxide gas mixed with chloroform and air for longer than the time claimed for his father by Mr. Biggs, and as my old friend, Dr. Buxton, does not seem to have seen a communication I made to your journal some years ago, perhaps my experience may help to support Mr. Biggs's contention, and be in agreement with Dr. Buxton's objections.

Some years before the late Mr. Clover's death (the pioneer of nitrous oxide gas and pure ether) I had become dissatisfied with such a mixture for many reasons. The chief was that it was unscientific. Nitrous oxide distends the red corpuscles of the blood. When the physiologist wishes to obtain hæmatin from the red blood corpuscles he destroys the animal with ether. Chloroform accentuates the shape of the red (oxygenated) corpuscle. I therefore mixed the nitrous oxide and chloroform. About this time a patient one day at the late King's dentist's remarked: "What a pity you gentlemen cannot invent something that allows the patient to know what is going on, and at the same time feel no pain." I was so struck that I went away full of the idea. By introducing a certain amount of chloroform into the gas cylinder before the gas was added, I obtained such a mixture, but I did not like it; and I did not care to carry an extra bottle for the very few, who might like to know "what was going on." I had already driven the vapour of ether into my gas-bag, so I have since driven chloroform vapour mixed with air into the stream of nitrous oxide, as it enters the gas-bag, which is not india rubber (but of a washable material) made for me by Messrs. Down Bros. The introduction of air and regulation of the vapour meet the very wise objections put forth by Dr. Buxton, and I find I have none of the symptoms so definitely put forward by Mr. Biggs. One gentleman for whom I administer has never had any simple gas administered to his patients since I was first called in. Another of the dental profession to whom I have administered gas simply, and on another occasion the said mixture, says: "I remembered nothing immediately I noticed the chloroform." The amount of chloroform used for a minute to two minutes' insensibility does not amount to the vapour of five to 10 minims spread over 50 seconds. The rapidity with which the patient returns to consciousness from complete insensibility is the most astonishing thing about the short anæsthesia. To prolong I disconnect the tube from my vapour bottle, and insert it into a nostril, but then, of course, the patient becomes a pure chloroform patient. In describing the apparatus, I beg you to note there is only one valve to the face-piece, and that is an exit valve, and one tap to admit the vapour of chloroform, controlled entirely by the hand of the administrator.

Description.—A single-way tap is inserted into the junction of the tube leading from the nitrous oxide cylinder, having a bayonet joint which connects with a Woulffe bottle, such as I have used for 40 years. By this means the patient receives gas and chloroform disseminated thoroughly with a certain amount of air. I administer gas until the fauces and trachea are insensitive with nitrous oxide, then blow in the chloroform vapour, and finish with pure gas. For insensibility during painful surgical dressings, relaxation of muscles during reduction of dislocation, introduction of ether insensibility, or any short operation, as opening an abscess or cutting into a carbuncle, &c., it is the ideal process in my humble opinion.

I am, Sir, yours faithfully,

TOM BIRD, M.A., M.R.C.S.,

Feb. 28th, 1918. Consulting Anæsthetist to Guy's Hospital, &c.

THE CAUSE AND PREVENTION OF MYOPIA.

To the Editor of THE LANCET.

SIR,—Dr. Edridge-Green's explanation of the cause of myopia is remarkably confirmed by the following case.

A naval rating, aged 28, first noticed a defect of vision at the age of 18, which rapidly increased. He now wears −11 glasses, but during the last five years his vision has remained unaltered. His present occupation is that of a photographer. Wishing to fairly test Dr. Edridge-Green's explanation, conversation was gradually brought round to the subject of athletics and gymnastics; when gymnastics were mentioned, he at once produced several nude photographs of himself. They showed a man of great muscular development, and he volunteered the statement that he was particularly good at weight-lifting. On inquiry I ascertained that he took up gymnastics from the age of 17 to 23. It is remarkable that this period exactly corresponds with the period during which his eyesight failed and deteriorated.

Dr. Edridge-Green's explanation appears to have important morphological bearings. For instance, those animals which look down or suspend themselves head downwards for long periods of time, should, according to his views, present special structures to deal with the increased intra-ocular pressures. It is noteworthy that in hawks, owls, and the gannet, birds which habitually look down when seeking their prey, strong bony plates are found in the sclerotic coat; that in bats, which sleep head downwards, the retina is concertina-shaped; that in the whale, which dives to great depths, the sclerotic coat is of remarkable thickness. Further, it is possible that the pecten found in the eyes of birds and some reptiles may regulate the quick changes in pressure which must occur in these animals which

exhibit very rapid changes in orientation. Lastly, it may be mentioned that the eye is by no means the only organ which cannot expand and contract with varying blood and lymphatic pressures and that in such organs special regulating structures should be likewise found. In this connexion attention may be drawn to the frequent passage of vessels through bony and other resisting canals.—I am, Sir, yours faithfully,

Regent's Park-road, N.W., March 9th, 1918. J. C. MOTTRAM.

To the Editor of THE LANCET.

SIR,—Dr. F. W. Edridge-Green's explanation of the cause of myopia, though extremely valuable and interesting, does not seem to go to the root of the matter. An intermittent increase in intra-ocular tension, combined with an interference with the drainage system of the posterior lymph-passages, is probably another auxiliary factor in the production of myopia, just in the same way as the causes commonly given in the text-books are not the essential cause of the disease, but simply predisposing conditions.

In the last few months I have acted as ophthalmic surgeon to the Edinburgh National Service Recruiting Boards, and I hope at some future date, if I have the time and opportunity, to publish an analysis of some of the material which one is thus able to obtain, especially in relation to the etiology of myopia. My experience certainly strengthens in some aspects Dr. Edridge-Green's position. Myopia is found not even as commonly, but much more commonly, among the labouring classes than it is among those who follow sedentary occupations.

The question we have to decide is, What is the main essential cause of myopia? and I would like, with all diffidence, to put forward the following hypothesis:—

1. That the usual causes given in the text-books and also Dr. Edridge-Green's recent explanation of the condition are certainly factors in its production, but predisposing factors only.

2. That the essential cause is due to a post-natal mal-development of the tissue of the sclerotic. I am aware, of course, that this is an old explanation. Professor Roemer, of Greifswald, has termed this degeneration a scleromalacia in analogy with the similar degeneration of osseous tissue known as osteomalacia.

3. Now what is the cause of this degeneration? As far as I have seen, no satisfactory explanation has been given, and I would like to put forward the theory that it is due to the action of a toxin resulting from the presence in the organism of the tubercle bacillus. That it is, in fact, in a sense a scrofulous condition. How the toxin acts I am not at present prepared to say, but the suggestion certainly seems in many respects to square with the following facts:—

(*a*) We know that the tubercular toxins have a very serious detrimental influence on the development of structure and that they do lead to tissue degeneration elsewhere. Also that they have a special affinity for the eye membranes.

(*b*) Myopia occurs in the class which are specially liable to tubercular infection—i.e., town-dwellers and persons living under bad hygienic conditions.

(*c*) It is very often associated with general debility and maldevelopment. The higher the degree of myopia often the more marked is this pathological correspondence.

(*d*) Myopia is frequently an inherited condition, and so is the tubercular tendency.

(*e*) The conditions which have produced the greatest effect in reducing the incidence of myopia are simply those which place the individual in better hygienic conditions as regards good food, fresh air, and suitable exercise.

I can at present see no practical application of this theory beyond the following important points. Firstly, that rapidly advancing cases of high myopia should be treated on the same lines as cases of latent tuberculosis, and that, secondly, we have another urgent reason for the speedy adoption of a higher standard of hygiene both in the life and surroundings of our town-dwellers.

I am, Sir, yours faithfully,

J. KIRK, M.D. Edin.,

Oculist to the Edinburgh National Service Medical Boards.

Edinburgh, Feb. 27th, 1918.

To the Editor of THE LANCET.

SIR,—Dr. F. W. Edridge-Green's contribution is valuable, based as it is on clinical observation, but the heading is not happily worded, as myopia may have more causes than one. But to establish any one of them for certain is a definite step forward. His clinical observations have experimental support. Georg Levinson[1] carried out experiments on two apes. His theory is that when by bending the head and trunk the globe is brought into a dependent position, the pull of its weight on the optic nerve entrance in the sagittal and nasal directions must result in axial myopia with its characteristic changes such as have been unexceptionably produced experimentally. He concludes that high myopia and so-called school myopia differ only in degree but not in kind.

Under experimental conditions Levinson found no rise of intra-ocular pressure in the ape's eye by manometric measurement. Though Dr. Edridge-Green's occupational conditions correspond, more or less, with Levinson's experimental conditions, the latter's theory of myopia has a surer foundation than the former's. It is difficult to conceive how there could be such increase of intra-ocular tension due to lymphatic congestion as to produce permanent elongation of the eye-ball without producing symptoms of acute glaucoma or distension of the tough sclerotic coat, while the optic disc, as pointed out by Mr. J. A. Wilson, does not suffer. As either under the occupational conditions of Dr. Edridge-Green or the experimental conditions of Levinson, congestion of the globe, whatever its degree may be, is unavoidable, when, according to Levinson's explanation, the dimensions of the globe increase, the congestion probably helps to damage the choroid and retina. If Dr. Edridge-Green's theory is to be accepted, one has to assume that the optic disc is more resistant to increased intra-ocular pressure than the sclerotic, and that the yielding of the latter to it so concurrent with the increase as to produce no symptoms of acute glaucoma.

I am, Sir, yours faithfully,

Eastbourne, Feb. 25th, 1918. D. V. GIRI.

[1] Levinson (Berlin): Arch. f. Ophthalmologie, lxxxviii., August, 1914.

THE TREATMENT AND PREVENTION OF MALARIA.

To the Editor of THE LANCET.

SIR,—I have read with much interest the leading article in THE LANCET, Feb. 23rd, on quinine in the treatment and prevention of malaria. During a three years' residence in South Africa I attended some hundreds of cases of malaria, generally of the benign tertian or quartan type, and found a combination of quinine (5–7 gr.) with 1–2 minims of acid carbol. liq. pur., administered three or four times daily, of the utmost value. The addition of the carbolic acid seemed greatly to enhance the effects of the quinine, and this view was shared with me by the late Sir Starr Jameson, whom I attended during a severe malarial attack. The dosage of the combination must vary with the severity of the case, the condition of the blood, and whether the fever is of a benign or malignant type.

I am, Sir, yours faithfully,

Worcester, Feb. 27th, 1918. J. NELSON MATTHEWS, M.D.

THE CASE OF DR. J. HENDERSON BELL.

To the Editor of THE LANCET.

SIR,—I regret the delay in despatching the copies of the printed précis relative to the above case. They will be sent off the moment they are received from the printer. Much interest is being taken in this case, judging from the many applications received for copies of the précis. I shall be happy to despatch copies to anyone who sends me a stamped addressed envelope to this address.

I am, Sir, yours faithfully,

A. G. PENTREATH.

Adderley Rectory, Market Drayton, March 12th, 1918.

ROYAL DENTAL HOSPITAL.—The Bishop of London has kindly consented to preside at the annual general meeting of governors on Tuesday next, at 3 o'clock. The Bishop's visit is a fitting celebration of the sixtieth year of the hospital's existence, it having been founded in Soho-square in 1858, and it is hoped there will be a large attendance of all those who are interested in the excellent work which is being done at the hospital. Part of the hospital is devoted to the treatment of the troops of the London District, and in this section many thousands of men have been treated and made fit for active service, and this without detriment to the civilian patients treated as usual in spite of the depleted staff. Lieutenant-General Sir Francis Lloyd, General Officer Commanding London District, will speak in testimony of the value of this work.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue:—

Died.

Lieut.-Col. A. L. Duke, I.M.S., qualified at Aberdeen in 1888, and joined the I.M.S. in the following year. He was Residency Surgeon and Chief Medical Officer at Baluchistan prior to the outbreak of war, and died at Quetta of acute pneumonia.

Previously reported Missing, believed Drowned, now reported Drowned.

Lieut. K. H. Bhat, I.M.S., was a student at Charing Cross Hospital, London, and qualified in 1916.

Missing, believed Drowned.

Lieut.-Col. J. C. Furness, R.A.M.C., was a student at Charing Cross Hospital, London, and qualified in 1901. He was an honorary lieutenant in the Army and saw service in the South African War. Prior to joining the R.A.M.C. he was in practice at Kidsgrove, North Staffs., where he was medical officer and public vaccinator for the district.

Lieut. J. A. Stainsby, R.A.M.C., was a student at the London Hospital and qualified in 1894. He was in practice at Ecclesfield, Sheffield, previously to joining the R.A.M.C. in September last.

Capt. G. W. Young, R.A.M.C., qualified at Edinburgh in 1903, and was chief medical officer to the Antofagasta and Bolivia Railway Company, Chili, prior to joining up.

Wounded.

Lieut. A. W. Gill, R.A.M.C., attached Dorset Regiment.
Capt. J. G. Ronaldson, M.C., R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Second Lieut. T. W. Manley, R.F.C., accidentally killed, only surviving son of Dr. H. Manley, of West Bromwich, Staffordshire.

Lieut. J. Stevenson, R.N.R., reported missing, now officially presumed killed, younger son of the late Dr. L. H. Stevenson, of Cannon-street, London.

THE HONOURS LIST.

The following awards to, and promotions of, medical officers are announced:—

C.M.G.

Lieut.-Col. (temp. Col.) H. N. Dunn, D.S.O., R.A.M.C.

Brevet Lieutenant-Colonel.

Maj. E. S. Forde, R.A.M.C.

Distinguished Service Order.

Maj. (acting Lieut.-Col.) H. Fulton, R.A.M.C.

THE MEDICAL SERVICE OF THE AIR FORCE.

As we briefly indicated in THE LANCET of March 9th, it has been decided to control the medical affairs of the Air Force by a medical administrative committee constituted as follows: The Director-General, Naval Medical Service (chairman); the Director-General, Army Medical Service; a medical administrator of the Air Force (Fleet-Surgeon R. C. Munday, R.N., who receives the rank of Surgeon-General); an assistant medical administrator (Major C. B. Heald, R.A.M.C., who becomes Lieutenant-Colonel); a neurologist (Dr. Henry Head, F.R.S., physician to the London Hospital); a physician (Surgeon-General H. D. Rolleston, R.N., senior physician to St. George's Hospital); a surgeon (Captain Raymond Johnson, R.A.M.C., surgeon to University College Hospital); a physiologist (Dr. Leonard Hill, F.R.S., professor of physiology at the London Hospital Medical School); and Sir Walter Fletcher, F.R.S., the secretary of the Medical Research Committee. A number of the members of this committee already possess considerable experience of the matters which will come before their notice. Fleet-Surgeon Munday has presided for the past year over a joint medical advisory committee of the R.N.A.S. and the R.F.C. Major Heald has been continuously associated with the medical work of the R.F.C. for more than two years, except for a period of convalescence from an aeroplane accident. Dr. Head has been equally long engaged in the hospital treatment of R.F.C. officers. Surgeon-General Rolleston is a member of the joint advisory committee and on the staff of the special R.F.C. hospital at Mount Vernon. It is on the recommendation of this committee that the president of the Air Council will select experienced medical officers, allotting to them temporary Air Force commissions. Amongst others, such appointments are likely to include Major J. L. Birley, at present acting as medical officer in charge of the R.F.C. in the field; Major H. C. T. Langdon, president of the R.F.C. Commissions Board; Surgeon H. Graeme Anderson, R.N., who has elaborated methods for the systematic examination of air candidates; and Major Martin Flack, who is doing pioneer work on the applied physiology of flying.

The advisory committee will set to work at once to determine the medical requirements of the Air Force and to see how far these have been already met. Hospitals or special wards in naval and military hospitals will be placed at the disposal of the committee, which will retain a direct relation with the medical officer in charge. The work of the medical boards dealing with the entry of recruits into the service will be carefully scrutinised and inspection of the home aerodromes undertaken. As soon as possible all the medical arrangements of the Air Force will be centralised under the direction of the committee.

THE MEDICAL STUDENT AND NATIONAL SERVICE.

With the issue of National Service Instruction No. 5 of 1918 on March 5th medical study practically becomes a reserved occupation. Provided that the student has passed his first professional examination in chemistry, physics, and biology, shows reasonable diligence in passing the later examinations, and joins an O.T.C., he will not be called up for combatant service. The same applies to students who have not yet passed the first professional examination, but who do so before the end of next July, as well as to such full-time students at any stage who have been placed in medical category B 2 or lower, or in Grade 3. Acceptance when offered of a surgeon-probationership in the Navy is a further condition of protection under the Instruction. The position in regard to each several student is being reviewed at the present time and thereafter at intervals of six months. It should be noted that the Instruction deals with the position of fit students as they exist at the moment, and makes no arrangement for others to commence their studies unless they are in a low medical category.

MEDICAL UNITS AND CHEVRONS.

Answering a question in the House of Commons from Mr. Tyson Wilson, Mr. Macpherson, Under Secretary for War, said that it had been decided that medical personnel, including nurses serving on hospital ships and ambulance transports, were eligible for chevrons by virtue of such service.

WAR PHOTOGRAPHS.—An exhibition of British war photographs in colours is being held under the direction of the Ministry of Information at the Grafton Galleries, Old Bond-street, London. The pictures are realistic scenes at the various battle-fronts, representing active warfare in all forms, the tending of the wounded, and the daily occupations and amusements of the soldiers, which are graphically depicted. The centre attraction of the exhibition is the enlarged photograph of tanks going into action on the Western front, which measures 22 ft. by 13 ft. 6 in., and is said to be the largest photograph in the world.

ASSOCIATION FOR PROMOTING THE TRAINING AND SUPPLY OF MIDWIVES.—The annual meeting will be held at 9, Park-crescent, Portland-place, London, W., on Wednesday next, March 20th, at 3.30 P.M., when the chair will be taken by Right Hon. T. McKinnon Wood, M.P., and a short address on "Proposals for a State-aided Midwifery Service" will be given by Miss Amy Hughes.

URBAN VITAL STATISTICS.

(Week ended March 9th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 16·7, against 16·7 and 15·7 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 17·5, or 1·8 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 7·0 in Edmonton, 8·7 in Enfield, and 9·3 in East Ham to 23·6 in Darlington, 25·2 in Merthyr Tydfil, and 38·2 in Barnsley. The principal epidemic diseases caused 568 deaths, which corresponded to an annual rate of 1·7 per 1000, and included 246 from measles, 201 from whooping-cough, 62 from diphtheria, 43 from infantile diarrhœa, 10 from scarlet fever, and 6 from enteric fever. Measles caused a death-rate of 3·3 in Oxford and in Great Yarmouth, 3·6 in Southampton, 5·1 in Norwich and in Leeds, 5·2 in Swindon, and 12·7 in Barnsley; whooping-cough of 2·0 in Plymouth, 2·3 in Oldham, and 2·5 in Bath and in West Hartlepool; and diphtheria of 2·3 in St. Helens. The 939 cases of scarlet fever and 1644 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 32 and 29 below the respective numbers remaining at the end of the previous week; 6 new cases of small-pox were admitted during the week. Of the total deaths in the 96 towns 142 resulted from violence. The causes of 49 deaths were uncertified, of which 10 were registered in Birmingham, 4 each in Bootle and Gateshead, and 3 in Liverpool.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 14·6, against 14·8 and 14·0 per 1000 in the two preceding weeks. The 313 deaths in Glasgow corresponded to an annual rate of 14·6 per 1000, and included 6 each from measles and whooping-cough, 5 from diphtheria, and 2 from infantile diarrhœa. The 75 deaths in Edinburgh were equal to a rate of 11·7 per 1000, and included a fatal case of measles and another of diphtheria.

Irish Towns.—The 136 deaths in Dublin corresponded to an annual rate of 24·3, or 5·6 per 1000 above that recorded in the previous week, and included 3 from infantile diarrhœa, 2 each from whooping-cough and diphtheria, and 1 each from enteric fever and measles. The 194 deaths in Belfast were equal to a rate of 25·7 per 1000, and included 20 from whooping-cough, 4 from measles, and 1 each from enteric fever, typhus, and infantile diarrhœa.

VITAL STATISTICS OF LONDON DURING THE YEAR 1917.

In the accompanying table statistics of sickness and mortality in the City of London and in each of the metropolitan boroughs are summarised for the year 1917. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to a rate of 4·2 per 1000 of the population, estimated at 4,237,387 persons; in the three preceding years the rates were 9·0, 7·1, and 5·1 per 1000 respectively. Among the various boroughs the rates last year ranged from 2·5 in the City of London, 2·9 in Kensington, 3·0 in Hampstead, 3·2 in Hammersmith and in Holborn, to 5·4 in Stepney, 5·8 in Shoreditch, 5·9 in Greenwich, 6·0 in Southwark, 6·4 in Bethnal Green, and 7·2 in Bermondsey. No case of small-pox was notified last year, against 11 and 1 in the two preceding years. The prevalence of scarlet fever showed a considerable decline last year; 6110 cases were notified, against 17,104 and 8766 in the two preceding years. Among the metropolitan boroughs the greatest proportional prevalence of this disease was recorded in Chelsea, Shoreditch, Bethnal Green, Bermondsey, Wandsworth, Greenwich, and Lewisham. The Metropolitan Asylums Hospitals contained 1246 scarlet fever patients at the end of last year, against 2451 and 913 at the end of the two preceding years; 6056 new cases were admitted during the year, against 16,327 and 8542 in the two preceding years. Diphtheria was rather less prevalent than it had been in the preceding year; 8300 cases were notified as compared with 9166 and 8754 in the two preceding years. This disease was proportionally most prevalent in Shoreditch, Bethnal Green, Stepney, Southwark, Bermondsey, and Greenwich. The number of diphtheria patients remaining under treatment at the end of last year in the Metropolitan Asylums Hospitals was 1656, against 1476 and 1479 at the end of the two preceding years; the number of cases admitted during the year was 8554, against 8608 and 8683 in the two preceding years. The prevalence of enteric fever was about equal to that of the preceding year, but was considerably less than it had been in other recent years, 452 cases being notified, against 758, 779, 647, and 463 in the four preceding years. The greatest proportional prevalence of this disease was recorded in Hammersmith, Chelsea, Hampstead, Stepney, Poplar, and Wandsworth. The number of enteric fever patients admitted into the Metropolitan Asylums Hospitals during the year was 271, against 470, 446, and 324 in the three preceding years; 32 cases remained under treatment at the end of the year, against 63, 50, and 37 at the end of the three preceding years. The greatest proportional prevalence of erysipelas occurred in Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, and Deptford. The 199 cases of puerperal fever notified during the year included 16 in Islington and in Stepney, 15 in Fulham and in Poplar, 14 in Wandsworth, 13 in Lambeth, 12 in Southwark, and 11 in Woolwich. The 393 cases of cerebro-spinal meningitis included 30 in Islington, 27 in Lambeth, and in Wandsworth, 25 in St. Pancras, 24 in Bethnal Green, and 23 in Camberwell. The 58 cases of poliomyelitis included 8 in Lambeth, 6 in Islington, 5 in Hammersmith and in Wandsworth, and 4 in Fulham, Stepney, and Poplar.

The mortality figures in the table relate to deaths of persons actually belonging to the various metropolitan boroughs, and are obtained by distributing the deaths in institutions among the boroughs in which the deceased persons had previously resided. During last year the deaths of 61,933 London residents were registered, equal to a death-rate of 14·7 per 1000; in the three preceding years the rates had been 14·4, 16·1, and 14·3 per 1000. The lowest death-rates last year were 10·9 in the City of London, 11·0 in Hampstead, 11·6 in Lewisham, 11·8 in Woolwich, and 12·2 in Wandsworth; the highest rates were 17·5 in Southwark, 17·9 in Holborn, 18·0 in Bermondsey, 18·8 in Finsbury, and 19·5 in Shoreditch. The deaths from all causes included 4815 which were referred to the principal infectious diseases; of these, 1998 resulted from measles, 85 from scarlet fever, 580 from diphtheria, 550 from whooping-cough, 96 from

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING THE YEAR 1917.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1916.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.									
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.
LONDON	**4,237,387**	—	**6110**	**8300**	**1**	**452**	**13**	**199**	**2344**	**393**	**58**	**17,870**	**4·2**	—	**1998**	**85**	**580**	**550**	**96**	**1506**	**4815**	**1·1**	**61,933**	**14·7**
West Districts :																								
Paddington	130,668	—	121	228	—	11	—	7	66	10	1	444	3·4	—	114	2	13	19	1	49	198	1·5	1993	15·3
Kensington	152,144	—	166	164	—	21	—	2	67	16	3	439	2·9	—	101	3	8	12	4	51	179	1·2	2407	15·9
Hammersmith ...	117,965	—	139	183	—	20	—	—	52	10	5	379	3·2	—	39	1	11	12	6	32	101	0·9	1624	13·8
Fulham	149,428	—	234	235	—	11	—	15	50	20	4	569	3·8	—	75	4	16	22	2	71	190	1·3	1968	13·2
Chelsea	57,298	—	101	54	—	10	—	4	24	4	3	200	3·5	—	6	—	2	2	1	24	35	0·6	881	15·4
City of Westminster	132,853	—	195	158	—	14	—	7	45	12	1	432	3·3	—	23	2	11	7	4	18	65	0·5	1844	13·9
North Districts :																								
St. Marylebone ...	98,573	—	95	165	—	5	—	1	51	6	1	324	3·3	—	99	—	8	9	1	26	143	1·5	1537	15·6
Hampstead	81,470	—	64	134	—	12	—	—	28	4	—	242	3·0	—	12	—	3	1	3	10	29	0·4	895	11·0
St. Pancras	196,812	—	246	450	—	22	1	9	121	25	1	875	4·5	—	118	4	25	28	6	78	259	1·3	3098	15·8
Islington	309,359	—	475	568	—	25	—	16	169	30	6	1277	4·1	—	147	4	33	46	4	87	321	1·0	4591	14·9
Stoke Newington...	49,776	—	39	110	—	4	—	2	24	5	2	186	3·7	—	20	—	9	8	—	8	45	0·9	711	14·3
Hackney	209,636	—	308	306	—	20	1	9	123	17	1	785	3·8	—	17	7	22	25	6	70	147	0·7	2811	13·4
Central Districts :																								
Holborn	38,161	—	29	68	—	2	1	—	16	5	—	121	3·2	—	37	—	1	1	—	10	49	1·3	680	17·9
Finsbury	74,230	—	116	165	—	3	—	7	33	5	—	329	4·4	—	100	2	9	10	1	28	150	2·0	1392	18·8
City of London ...	20,113	—	18	28	—	—	—	—	4	—	—	50	2·5	—	1	—	2	1	—	—	4	0·2	218	10·9
East Districts :																								
Shoreditch	99,932	—	165	273	—	7	3	4	113	15	—	580	5·8	—	133	5	25	20	1	81	265	2·7	1943	19·5
Bethnal Green ...	115,552	—	246	348	—	10	1	6	98	24	1	734	6·4	—	67	3	16	9	2	59	156	1·4	1659	14·4
Stepney	258,396	—	397	707	1	44	1	16	194	15	4	1379	5·4	—	111	6	58	29	5	141	350	1·4	3899	15·1
Poplar	155,095	—	204	365	—	39	—	15	116	8	4	751	4·9	—	89	5	**24**	33	5	75	231	1·5	2373	15·3
South Districts :																								
Southwark	177,166	—	274	581	—	10	—	12	170	18	2	1067	6·0	—	75	7	46	35	5	85	253	1·4	3087	17·5
Bermondsey	113,661	—	311	414	—	7	—	4	74	6	1	817	7·2	—	76	1	19	32	5	84	217	1·9	2045	18·0
Lambeth	283,729	—	333	525	—	20	3	13	120	27	8	1049	3·7	—	108	5	49	38	5	87	292	1·0	4177	14·8
Battersea	159,402	—	244	184	—	14	—	4	70	16	1	533	3·4	—	74	4	12	33	6	44	173	1·1	2248	14·1
Wandsworth	310,858	—	556	436	—	46	2	14	102	27	5	1188	3·8	—	131	12	33	31	7	59	273	0·9	3770	12·2
Camberwell	249,749	—	335	409	—	26	—	7	119	23	2	921	3·7	—	109	4	38	44	4	83	282	1·1	3625	14·6
Deptford	107,696	—	119	262	—	13	—	3	109	9	—	515	4·8	—	30	2	22	19	—	54	127	1·2	1617	15·1
Greenwich	94,452	—	155	322	—	13	—	3	51	8	—	552	5·9	—	45	1	27	8	2	37	120	1·3	1427	15·1
Lewisham	162,901	—	288	227	—	10	—	3	58	14	1	606	3·7	—	12	—	21	6	7	29	75	0·5	1878	11·6
Woolwich...	130,313	—	137	270	—	12	—	11	77	14	1	522	4·0	—	29	1	17	10	3	26	86	0·7	1535	11·8
Port of London ..	—	—	—	—	1	—	3	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

enteric fever, and 1506 from diarrhœa and enteritis among children under 2 years of age. The death-rate from these diseases in the aggregate ranged from 0·2 in the the City of London, 0·4 in Hampstead, 0·5 in the City of Westminster and in Lewisham, and 0·6 in Chelsea to 1·5 in Paddington, St. Marylebone, and Poplar, 1·9 in Bermondsey, 2·0 in Finsbury, and 2·7 in Shoreditch. The 1998 fatal cases of measles were 431 more than the corrected average number in the five preceding years; this disease was proportionally most fatal in Paddington, Kensington, St. Marylebone, Holborn, Finsbury, Shoreditch, and Bermondsey. The 85 deaths from scarlet fever were 141 below the corrected average number; the greatest proportional mortality from this disease was recorded in Hackney, Shoreditch, Poplar, Southwark, and Wandsworth. The 580 fatal cases of diphtheria were 2 in excess of the corrected av rage number; this disease showed the greatest proportional mortality in Shoreditch, Stepney, Southwark, Deptford, and Greenwich. The 550 fatal cases of whooping-cough were 380 below the corrected average number; the highest death-rates from this disease were recorded in Shoreditch, Poplar, Southwark, Bermondsey, Battersea, Camberwell, and Deptford. The 96 deaths from enteric fever were 17 fewer than the average, and included 7 in Wandsworth, 7 in Lewisham, and 6 each in Hammersmith, St. Pancras, Hackney, and Battersea. The mortality from diarrhœa and enteritis among children under 2 years of age was greatest in Fulham, Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, Bermondsey, and Deptford. In conclusion, it may be stated that the aggregate mortality in London last year from these principal infectious diseases was 16 per cent. below the average.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

A. R. Doyle to be Temporary Surgeon.

ARMY MEDICAL SERVICE.

Lieut.-Col. W. E. Hume, R.A.M.C. (T.F.), to be temporary Colonel.
Capt. J. A. Nixon, R.A.M.C. (T.F.), to be temporary Colonel.

TERRITORIAL FORCE.

Lieut.-Col. (temp. Col.) W. M. Roocroft, C.M.G., relinquishes his commission on account of ill-health and is granted the honorary rank of Colonel.

Major-Gen. T. H. J. C. Goodwin, C.M.G., D.S.O., from Deputy Director-General, to be Director-General (temporary), and to be temporary Lieutenant-General, vice Lieut.-Gen. Sir A. Keogh, G.C.B., retired pay.

Col. G. B. Stanistreet, C.M.G., from an Assistant Director-General, to be Deputy Director-General (temporary), and to be temporary Major-General.

Col. J. R. McMunn, C.M.G., to be Assistant Director-General (temporary), vice Col. G. B. Stanistreet.

Major Sir E. Worthington, C.M.G., M.V.O., R.A.M.C., from a Deputy Assistant Director-General, to be an Assistant Director-General, and to be temporary Lieutenant-Colonel.

Major P. G. Easton, D.S O., R.A.M.C., to be a Deputy Assistant Director-General, vice Major Sir E. Worthington, C.M.G.

Major A. B. Smallman, D.S.O., R.A.M.C., to be a Deputy Assistant Director-General, vice Major G. A. D. Harvey, who has vacated.

ROYAL ARMY MEDICAL CORPS.

Surg.-Gen. G. C. Jones, C.M.G., Canadian A.M.C., relinquishes his appointment as Medical Commissioner.

Capt. E. F. Buzzard, R.A.M.C., T.F., whilst serving at the Tooting Military Hospital, and Major C. H. Fagge (Brevet Lieut.-Col., R.A.M.C., T.F.), whilst serving with the Hampstead Military Hospital, to be temporary Lieutenant-Colonels.

To be acting Lieutenant-Colonels whilst in command of a Medical Unit: Major W. C. Croly, Capt. L. F. K. Way, Capt. W. McK. H. McCullagh, D.S O., M.C.

Majors relinquishing the acting rank of Lieutenant-Colonel on reposting: G. A. Kempthorne, D.S.O., R G. Meredith.

Major Geoffrey W. G. Hughes, D.S.O., retains the acting rank of Lieutenant-Colonel whilst in command of a Casualty Clearing Station.

Temp. Major C. F. L. Haszard, from Canadian Light Horse, to be temporary Major.

Capt. F. A. Hepworth, R.A.M.C., T.F., to be temporary Major whilst serving with the County of Middlesex War Hospital.

Temp. Capt. F. F. Muecke to be temporary Major.

Temporary Captains, Canadian A.M.C., to be temporary Majors: R. J. Gardiner, W. H. Scott, M.C., G. W. Hall, H. W. McGill, M.C., B. E. Kelly.

A. A. Hudson and M. McNiff, late temporary Captains, are granted the honorary rank of Captain.

Temporary Lieutenants to be temporary Captains: M. C. Gardner, S. J. McC. Bradshaw, W. E. Barrett, A. K. S. Wyborn, J. M. N. S. Bickerton, J. L. H. Paterson, D. Mitchell, J. Cameron, M. J. Ryan, P. O. W. Browne, G. P. Jones, H. W. Catto, J. Freeman, G. H. Joseph, J. E. Ratcliffe, D. C. Ogilvie, W. F. Box, N. S. Sherrard, H. Archer, J. R. Dick, H. E. Batten, J. L. D. Lewis, W. M. Oakden, W. J. Oliver, C. G. Lees, J. J. Reidy, H. B. Emerson, R. M. Liddell, R. McCaffrey, J. C. Jones, C. J. Marshall, R. S. Drew, D. F. Brown, H. N. Wright, J. F. Allen, V. J. Bonavia, E. M. Brown, H. H. Bywater, F. Humphreys, A. H. H. Barclay, P. W. L. Andrew, J. P. Grainger, L. C. Rorke, J. Holland, C. H. Bannerman, N. B. Stewart, J. T. Titterton, P. L. Hope, A. R. H. Geyer, W. L. Nicholson, R. C. Hutchinson, E. G. Bark, C. H. Medlock.

A. F. M. Fuoss to be Lieutenant.

Second Lieut. F. J. Power, from Unattached List, T.F., to be temporary Lieutenant.

Officers relinquishing their commissions: Temp. Major G. H. Clark. Temp. Capts. G. E. Dodson, T. J. Taunton, L. A. Drake, E. A. Pearson, J. McMurray (on account of ill-health contracted on active service, granted honorary rank of Captain), S. Jackson. Temp Lieuts. H. E. Davison, C. E. A. Thacker, and H. A. Whitcombe (on appointment under Ministry of Pensions), J. Blakeley, G. Gordon, F. E. Mathews, T. Archdeacon, H. B. Watson, M. C. Irwin, J. C. Pearce, C. J. G Bourhill.

SPECIAL RESERVE OF OFFICERS.

Brevet Major J. N. McLaughlin relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Major.

J. R. Cox and M. W. Geffen (University of London Contingent, O.T.C.) to be Lieutenants.

TERRITORIAL FORCE.

Major A. B. S. Stewart to be Lieutenant-Colonel.

Major G. W. Miller, D.S.O., to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

The undermentioned relinquish their commissions on taking up duty under the Ministry of National Service: Temp. Major C. J. Caddick, Temp. Capt. J. J. Dunne.

Capt. G. A. Auden is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services.

Capt. H. Pinto-Leite is restored to the establishment on vacating appointment as Deputy Assistant Director of Medical Services.

Capt. W. Robertson is seconded whilst holding a temporary commission in the R.A.M.C.

Capt. J. Davidson relinquishes his commission on account of ill-health, and is granted the honorary rank of Captain.

Capt. J. S. Manford resigns his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

Temporary Captains relinquishing their commissions: A. D. Morris, F. G. M. Simpson, J. S. Taylor, J. E. Manlove, R. V. Steele (on account of ill-health contracted on active service)

Temporary Lieutenants relinquishing their commissions: A. Kirkhope, A. R. H. Harrison, P. M. Tolmie, C. L. Ievers, P. Quinn, E. E. Owens, E C Burnett.

Capt. W. F. Munro to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Lieut. J. D. Davidson to be Captain.

TERRITORIAL FORCE RESERVE.

Capt. E J. C. Groves resigns his commission on account of ill-health, and is granted the honorary rank of Captain.

Capt. G. L. Travis, from R.A.M.C., to be Captain.

INDIAN MEDICAL SERVICE.

Majors to be Lieutenant-Colonels: T. H. Delany, J. W. F. Rait, E. J. O'Meara, G. Tate, R. F Baird, A. T Gage, G. McPherson, S. Hunt, A. G. Sargent, de V. Condon, H. A. J. Gidney, W. Lethbridge.

DEATHS IN THE SERVICES.

Deputy Surg.-Gen. William Sly, on March 6th, at Parkfield, Lowestoft. He served in the North-West Frontier of India Campaign of 1863, and took part in the defence of the Sungahs at the Umbeyla Pass, storming of the Conical Hill, and burning of Lallo (medal with clasp).

Medical News.

UNIVERSITY OF BRISTOL.—At the Second Examination for the Degrees of M.B., Ch.B. (Part II.), held recently, the following candidates were successful:—

Khai Way Chan, Nan Susan Jolie Roberts, and Marjorie Wadsworth.

WOMEN'S ORGANISATIONS AND A MINISTRY OF HEALTH.—A well-attended conference arranged by the Fabian Women's Group and the Women's Industrial Council was held on Thursday, March 7th, on the Proposals for the Establishment of a Ministry of Health. The Right Hon. Herbert Samuel, M.P., took the chair. Miss Margaret Bondfield, Dr. Ethel Bentham, and Major Waldorf Astor, M.P., addressed the conference, and the following resolution was passed:—

That this conference of women's organisations suggest for the consideration of its constituent bodies the desirability of pressing upon the Government the immediate establishment of a Ministry of Health, which should have complete control of the provision for maternity, infant welfare, tuberculosis, venereal diseases, health insurance, health matters under the Factory Acts, and medical care of children, and other matters relating to the health of the people, now undertaken by a variety of Government departments; that an adequate Treasury grant should be placed at the disposal of this Ministry for the direction of all such health services; that in the directing branches of such Ministry women should be fully represented; and that a further conference should be summoned for April 12th to consider the replies from those organisations.

ROYAL SUSSEX COUNTY HOSPITAL, BRIGHTON.—The annual report of this institution states that 3332 in-patients were treated during 1917, as compared with 3357 in 1916, the number of out-patients being 6837, as compared with 7283; and a feature of the year was the complete obliteration of the waiting list for civilians—a clear proof, as Mr. R. Ball Dodson, chairman of the board of management, said at the annual meeting on Feb. 28th, of the manner in which the men of Sussex had responded to their country's call. The daily average number of beds occupied was 229, an increase of 8¼ over 1916, and the cost per bed had risen to £94 12s. 0¾d., while each patient cost 9s. more. 849 military patients were treated in the wards during the course of the year, with a daily average of 71 beds occupied. At the same

time the requirements of civilian patients seemed to have been fully met. The deficiency at the close of the year was, he added, £4273 13s. 1d. A special appeal has been made by the president, now Earl Brassey, for £10,000 to liquidate this overdraft at the bankers and for a sum of £6000 to carry on.

DEATH OF MR. G. R. PARKER, LANCASTER.—The death occurred at his residence, High-street, Lancaster, on Monday, of Mr. George Roger Parker, the senior medical practitioner of the town. Mr. Parker began his medical education at St. Bartholomew's, qualified M.R.C.S. Eng. in 1875, L.R.C.P. Lond. 1877. For 40 years he had been in practice in Lancaster. was attached to the Royal Lancaster Infirmary for 36 years, and was chairman of the medical committee. He took great interest in the Medical Book Club, Lancaster, an old institution. He was 26 years medical officer of the borough, and concurrently of the Lancaster rural district, and a certifying surgeon under the Factory Acts. He was the founder and first honorary secretary of the N.S.P.C.C. in Lancaster and district, his wife, who predeceased him ten years ago, also taking great interest in that work. Deceased was a keen botanist. He leaves two sons, the elder, Dr. George Musgrave Parker, Australia, having seen much service as a Captain in the Australian Medical Corps, the younger serving in the Australian Veterinary Corps, and a daughter, who is the wife of Mr. William Arthur Rail, Cape Town.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 6TH.

The Report on Army Medical Services.

Major D. DAVIES asked the Under Secretary for War whether, in view of the fact that the report on the Royal Army Medical Services had been conveyed to the Ministry of National Service, he could state the reasons for withholding this report from Members of the House of Commons; and whether he would reconsider the decision arrived at by the Secretary of State for War with regard to this matter.—Mr. MACPHERSON answered: The Council have not yet considered the report, and I cannot undertake to publish it until this stage has been reached. The recommendations of the report are now being investigated by the British military authorities in France.

Administrative Appointments in the Army Medical Service.

Major D. DAVIES asked the Under Secretary for War whether he could state the number of temporary medical officers holding administrative medical appointments in the Army; what percentage of administrative medical appointments in the Royal Army Medical Corps were held by the Regular officers; and whether any steps were going to be taken to provide tuition in staff duties to temporary medical officers of proved capacity and experience with a view to them holding such posts.—Mr. MACPHERSON replied: I am not clear as to what my honourable friend means by administrative medical appointments. There are large numbers of medical officers holding posts of an administrative nature in the United Kingdom and the various theatres of war, such as the heads of hospitals, registrars, sanitarians, deputy directors of medical services, inspectors, controllers of expenditure, &c. To ascertain the particulars for which my honourable friend asks would require prolonged inquiry, and I regret it cannot be undertaken. There is no occasion for taking the steps suggested in the last part of the question.

Medical Service of Air Force.

Major D. DAVIES asked the Under Secretary to the Air Ministry whether an advisory committee was created to determine the constitution and powers of a separate medical service in connexion with the Air Force; and whether he was prepared to lay this report upon the table of the House.—Major BAIRD said in reply: It has not been found possible to adopt in their entirety, at any rate for the present, the proposals of the committee. I do not think it is desirable to publish the report, which consists largely of administrative recommendations contingent on the adoption of the main proposals.

Treatment and Training of Disabled Soldiers in Wales.

Answering Major D. DAVIES, Mr. HODGE (Minister of Pensions) said: The Joint (Disablement) Committees for North and South Wales have been consulted, and as a result a joint consultative committee for Wales has been formed of the representatives of both joint committees. The first meeting of the new joint committee was held on the 23rd ultimo, and reviewed the whole subject of training and treatment of discharged soldiers in Wales. I am hopeful that the combined action thus initiated will have useful results.

Training Discharged Service Men as Dental Mechanics.

Mr. PENNEFATHER asked the Pensions Minister whether he was aware that the Liverpool Dental Hospital had established a technical school for the training of disabled sailors and soldiers in dental mechanics; and, if so, would he take steps to encourage the establishment of similar technical schools for the same purposes in other towns.—Mr. HODGE replied: A scheme for the training of discharged sailors and soldiers in dental mechanics at Liverpool Technical Institute is now under consideration. Courses of instruction have now been approved and are being carried on at London, Manchester, Swansea, and Newcastle-on-Tyne, and every encouragement is being given to the establishment of courses in other towns.

THURSDAY, MARCH 7TH.

Disease Amongst Aliens.

Major HUNT asked the Under Secretary for the Home Department whether his attention had been called to the report of a medical examiner of recruits to the effect that a very considerable proportion of the thousands of Russian and Polish men examined by him for the Army were found to be suffering from tuberculosis, trachoma, and the hidden plague; whether he could say why the port sanitary authorities allowed these men to land, and whether he would send them back to their native countries on the first possible opportunity.—Mr. BRACE replied: The answer to the first part of the question is in the negative. The rest of the question does not therefore arise. But I may point out that a large proportion of the men referred to came here before the passing of the Aliens Act, 1905, which gave the power to refuse aliens admission to this country.

Major HUNT: Is the honourable gentleman going to do nothing about these aliens who are diseased?—Mr. BRACE: As they came before 1905 I imagine we shall take no action in the matter, but if the honourable gentleman puts down a question I will make further inquiries.

Navy and Army Nurses.

Replying to Sir ARCHIBALD WILLIAMSON, Mr. HODGE said: I have no knowledge as to whether members of the Navy and Army Nursing Services have relatives dependent on them. No such cases have been brought to my notice, but I will consider the question of making some provision for the dependent relatives of nurses who lose their lives through war service. Army nurses are eligible for pensions if they suffer injury through military service arising out of the war.

Malaria and Dysentery in East Africa.

Answering Mr. JOWETT, who asked a question relating to the discharge of soldiers who had suffered seriously from malaria and dysentery in East Africa, Mr. MACPHERSON (Under Secretary for War) said: It is not considered necessary to discharge men who have suffered from malaria and dysentery, as after recovery they can still be employed on service. Serious cases are brought back to England unless in certain cases it is considered that they would benefit from the South African climate.

Institution for Mental Defectives at Stoneyetts.

Mr. WATT asked the Under Secretary for War whether the medical branch of his Department had had repeated applications for the release of Dr. Charles G. Chislett, of the 72nd General Hospital in France, so that he might be able to attend, if only for a short time, to his duties as medical superintendent of the Institution for Mental Defectives at Stoneyetts, near Glasgow; if so, would he say for what reason this temporary release was refused in view of the facts that 300 mentally deficient patients in that institution had no resident medical officer at present and that Dr. Chislett had already served two and a half years at the front, and could he arrange now to grant temporary release.—Mr. MACPHERSON replied: An application was received from the Glasgow District Board of Control for the release of this officer. It was referred to the Ministry of National Service, who consulted the Scottish Central Professional Committee. The latter body made a full investigation of all the circumstances and were of opinion that the request of the Glasgow District Board should not be acceded to, as the supervision and medical attention to the inmates of Stoneyetts Institution were being carried on to the satisfaction of the General Board of Control in the present exceptional circumstances.

Schools for Physically Defective Children.

Mr. ARNOLD WARD asked the President of the Board of Education to state in how many localities special schools had been provided for physically defective children; whether the system had been found to be satisfactory in the places where it had been adopted; and whether he would consider the question of extending the application of this method.—Mr. H. FISHER replied: Twenty-five local education authorities have provided special schools for physically defective children. The system has been found satisfactory where adopted and is certainly capable of useful extension in suitable areas.

MONDAY, MARCH 11TH.

Invalids and Food Rationing.

Mr. CATHCART WASON asked the Parliamentary Secretary to the Ministry of Food whether the Food Controller had ordered that no extra butter ration would be authorised except for individuals suffering from diabetes and tuberculosis; and whether he was aware that persons suffering from a certain form of indigestion must die unless they were able to carry out their doctors' order, while assurances had been given by those high in authority that they would receive a permit.—Mr. CLYNES wrote in reply: On the advice of a Committee of Reference of the Royal Colleges of Physicians and Surgeons and of the Central Medical War Committee it has been decided by the Ministry of Food that, for the time being, extra allowances of butter and margarine can only be made to invalids suffering from tuberculosis, diabetes (glycosuria), cœliac disease, or pancreatic insufficiency. It is improbable that a committee composed largely of medical men in extensive consulting practice would have overlooked any form of indigestion such as that to which the honourable Member refers, but if he states the nature of it special inquiry can be made.

Mr. WATT asked the honourable gentleman whether an increased ration of sugar could be provided for an invalid on the certificate of a doctor that an increased ration was necessary for the patient.—Mr. CLYNES answered: An increased ration of sugar is only necessary and only granted in cases where invalids are unable to swallow or have to be fed by tube with coucentrated nourishment. In other cases substitutes for sugar can be used.

WEDNESDAY, MARCH 13TH.

Ministry of Health.

Mr. HERBERT SAMUEL asked the Chancellor of the Exchequer whether the Government intended to proceed this session with a Bill for the establishment of a Ministry of Health.—Mr. BONAR LAW answered: I regret that I am not in a position to make any statement on this subject.

Sir WILLIAM COLLINS: Has any progress been made with an agreed scheme to which the right honourable gentleman referred in answer to a question some months ago?—Mr. BONAR LAW: Consultations have been taking place regularly and are still going on, and those who are conducting them are sanguine enough to hope that there will be an agreement.

Mr. ANDERSON: Is the right honourable gentleman aware that infantile mortality is still going on? Can the Government give us any hope that a scheme to deal with it will be brought forward?—Mr. BONAR LAW: Notice is to-day given of a Bill dealing with that, which does not affect in one way or another the larger question of a Ministry of Health.

BOOKS, ETC., RECEIVED.

BLACK, A. AND C., London.
Edinburgh School of Surgery Before Lister. By A. Miles. 5*s.*

H.M. STATIONERY OFFICE, London.
Alcohol: Its Action on the Human Organism. 2*s.* 6*d.*

HODDER AND STOUGHTON, London.
Deliverance of Jerusalem. By E. W. G. Masterman, M.D. 1*s.*

LIPPINCOTT (J. B.) COMPANY, Philadelphia and London.
Diseases of the Skin: Their Pathology and Treatment. By Milton B. Hartzell, M.D. 30*s.*

LONGMANS, GREEN, AND CO., London.
Directions for a Practical Course of Chemical Physiology. By W. Cramer, Ph.D., D.Sc., M.R.C.S., L.R.C.P. 3*s.*

THACKER, SPINK, AND CO., Calcutta.
Lyon's Medical Jurisprudence for India. By L. A. Waddell, C.I.E., Lieut.-Col. I.M.S. retd. 6 ed. 28*s.*

UNIVERSITY OF LONDON PRESS, London. (Military Medical Manuals, under the General Editorship of Sir Alfred Keogh. 6*s.* each.)
Fractures of the Orbit and Injuries of the Eye in War. By Felix Lagrange. Edited by J. Herbert Parsons, F.R.C.S.
Clinical Forms of Nerve Lesions. By Mme. Athanassio Benisty, (La Salpêtrière). Edited by Dr. E. Farquhar Buzzard.
Treatment of Fractures Involving Joints. By R. Leriche. Edited by F. F. Burghard, M.S. Vols. I. and II.
Artificial Limbs. By A. Broca and Dr. Ducroquet. Edited and Translated by R. C. Elmslie, M.S.
Fractures of the Lower Jaw. By L. Imbert and Pierre Réal. Edited by J. F. Colyer, F.R.C.S.
Treatment and Repair of Nerve Lesions. By Mme. Athanassio Benisty. Edited by Dr. E. Farquhar Buzzard.

UNIVERSITY PRESS, Aberdeen.
Roll of Commissioned Officers in the Medical Service of the British Army, 1727-1898. By the late Col. W. Johnston, C.B., M.D. Edited by Lieut.-Col H. A. L. Howell, R.A.M.C. 21*s.*

UNIVERSITY PRESS, Cambridge.
Social Life in Britain from the Conquest to the Reformation. Compiled by G. G. Coulton, M.A. 15*s.*

WILEY, JOHN, AND SONS, New York. CHAPMAN AND HALL, London.
A Course of Food Analysis. By A. L. Winton, Ph.D. 7*s.*

The following journals, magazines, &c., have been received:—Quarterly Journal of Medicine, Bulletin of the Johns Hopkins Hospital, American Journal of Surgery, Edinburgh Medical Journal, Journal of Laryngology, Rhinology and Otology, Archives Médicales Belges, Archives of Internal Medicine, Canadian Journal of Medicine and Surgery, Medical Review, Review of Neurology and Psychiatry.

Vacancies.

For further information refer to the advertisement columns.
(When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.)

Barrow-in-Furness, North Lonsdale Hospital.—Sec. H.S. £250.
Bermondsey Tuberculosis Dispensary.—M.O. £500.
Birkenhead Borough Hospital.—Jun. H.S. £170.
Birmingham and Midland Eye Hospital.—H.S. £200.
Birmingham City Hospital.—Med. Supt. £350.
Birmingham General Dispensary.—Res. M.O. £320.
Birmingham, St. Chad's Hospital.—Res. M.O. £150.
Bolingbroke Hospital, S.W.—Jun. H.S. £150.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Buxton, Derbyshire, Devonshire Hospital.—Asst. H.P. £100.
Cumberland, County of.—Temp. Asst. County M.O. £350.
Derbyshire County Council.—Tuberculosis Officer. £500.
Devonport, Royal Albert Hospital.—Res. H.S. £200.
Gloucestershire Royal Infirmary and Eye Institution.—First and Second H.S. £175 and £150.
Guildford, Royal Surrey County Hospital.—H.S. £250.
Hampshire County Council.—Temp. Asst. County M.O.H. £400.
Leeds Univ., Depts. Pathology and Bacteriology.—Professor.
Liverpool University Faculty of Medicine.—Sen. Dem. of Anat. £175.
Manchester Children's Hospital.—M.O. £200.
Manchester, City of.—Female M.O. £400.
Manchester County Asylum, Prestwich.—L.T. £7 7*s.* per week.
Manchester, Crumpsall Infirmary.—Locum Asst. Res. M.O. £7 7*s.* wk.
Manchester Royal Infirmary.—Asst. Res. Surg. Officer. £200.
Manchester Royal Infirmary and Dispensary.—Hon. Ophthal. Surg.
Newcastle-upon-Tyne Education Committee.—Asst. Sch. M.O. £350
Nottingham City Asylum.—Sec. Asst. M.O. £300.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Res. M.O. £150. Also M.O. for Electrical Dept. £100.
Royal College of Surgeons of England.—Exam. in Dent. Surg.
St. George's Hospital, S.W.—Surgeon.
St. Giles, Camberwell, Constance Rd. Institution.—Temp. Res. M.O. £400.
Sheffield Royal Infirmary.—H.S. £120.
Smethwick County Borough.—Female Asst. M.O.H. £400.
Southampton, Royal South Hants Hospital.—Sen. H.S. £300.
Willesden Municipal Hospital, N.W.—Jun. Res. M.O. £300.

Births, Marriages, and Deaths.

BIRTHS.

BARNES.—On March 10th, at Gloucester-place, W., the wife of Herbert Cooper Barnes, M.D., of a daughter.

CLAY.—On March 6th, at The Manor House, Fovant, Wilts, the wife of Dr. Richard C. C. Clay, of a daughter.

CRAW.—On Feb. 27th, at Annandale, Rhos-on-Sea, Colwyn Bay, the wife of Captain J. W. Craw, R.A.M.C., of a daughter.

LOCK.—On March 6th, at Herschel House, Cambridge, the wife of Captain Norman F. Lock, F.R.C.S., R.A.M.C., of Boston, Lincs., of a daughter.

MCMORLAND.—On March 8th, at Claremont-terrace, Glasgow, the wife of J. Bruce McMorland, M.B., Ch.B., Temporary Lieutenant, R.A.M.C., of a son.

MARRIAGES.

ARTHUR—STUCHFIELD.—On March 7th, at West Ealing Congregational Church, George Arthur, Captain, R.A.M.C., of 2, St. Stephen's-avenue, West Ealing, to Cora, youngest daughter of the late Frank Stuchfield, of Pittsburgh, and of Mrs. Stuchfield, of Lakewood, N.Y., U.S.A.

NICOL—MAYBERRY.—On March 2nd, at St. Petroc Church, Padstow, William Drew Nicol, M.R.C.S. Eng., Surgeon, R.N., to Norah Scella, youngest daughter of F. G. Mayberry, M.B., M.Ch. Univ. Dub., and J.P., of Riversdale, Kenmare, co. Kerry.

DEATHS.

MARSH.—On March 10th, at Edensor, Liss, Hants, of pneumonia, Fleet-Surgeon Herbert Elliott Marsh, aged 66.

MORGAN.—On March 8th, J. C. Morgan, Colonel A.M.S.

NELSON.—On March 4th, at Hagley-road, Edgbaston, Thomas Nelson, M.D., Red Cross County Director for Birmingham, aged 58.

SLY.—On March 6th, at West Gable, Pakefield, South Lowestoft, suddenly, Deputy Surgeon-General William Sly.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, March 13th, 1918.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Mar. 7	...	57	46	37	41	42	Overcast
,, 8	...	54	42	33	36	37	Overcast
,, 9	...	74	46	32	34	35	Foggy
,, 10	...	76	56	34	37	37	Foggy
,, 11	...	90	61	37	45	49	Fine
,, 12	...	95	62	46	46	50	Cloudy
,, 13	...	74	53	42	44	46	Cloudy

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, March 19th.

SPECIAL GENERAL MEETING OF FELLOWS, at 5 P.M.

MEETINGS OF SECTIONS.

Wednesday, March 20th.

HISTORY OF MEDICINE (Hon. Secretaries—J. D. Rolleston, Charles Singer): at 5 P.M.
Paper:
Dr. Charles Singer: The History of Military Surgery—Part 1: From the Invention of Gunpowder to the Seventeenth Century.
Exhibition of Books, Pictures, &c. (at 4.30 P.M.).

Thursday, March 21st.

DERMATOLOGY (Hon. Secretaries—J. E. R. McDonagh, H. MacCormac; Hon. Acting Secretary—S. E. Dore): at 5 P.M.
Cases will be shown at 4.30 P.M.

Friday, March 22nd.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—A. S. Blundell Bankart, G. E. C. Pritchard, C. P. Lapage): at 4.30 P.M.
Cases:
1. Cases of Purpura and Other Hæmorrhagic Conditions.
2. Dr. J. Porter Parkinson: Congenital Heart with Aortic Murmur.
3. Dr. Eric Pritchard: Congenital Heart: Unusual Murmur.
4. Mr. P. Bernard Roth: Osteogenesis Imperfecta.

Paper:
Sir William Osler: The Visceral Features of Purpura.
Discussion: Dr. W. Palmer Lucas (U.S.A.) and others.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
WEDNESDAY, March 20th.—4.30 P.M., Paper.—Mr. P. Shuttlewood: The Food Situation in Germany.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W. 1.
WEDNESDAY, March 20th.—5.30 P.M., Prof. Conradi, Mr. J. E. Barnard, and others: Dark Ground Illumination Theory and Practice.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.
TUESDAY AND THURSDAY, March 19th and 21st.—5 P.M., Lumleian Lectures:—Dr. G. F. Still: On Cœliac Disease. (Lectures II. and III.)

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out patients each day at 2.30 P.M.
(Details of the Post Graduate Courses were given in the first issue of the month.)

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W. 1.
TUESDAY, March 19th.—3 P.M., Dr. L. Hill: The Climatic Adaptation of Black and White Men.
FRIDAY.—5.30 P.M., Prof. Sir J. J. Thomson, O.M.: Radiation from System of Electrons.

CHADWICK PUBLIC LECTURES, at the Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.
THURSDAY, March 21st.—5.30 P.M., Capt. C. J. Moor: The Food Shortage and How to Meet It. (Lecture I.)

EDITORIAL NOTICES.

In consequence of the pressure on our space and the shortage of paper the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot prescribe or recommend practitioners.

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C. 2.

MANAGER'S NOTICES.

TO SUBSCRIBERS IN THE UNITED STATES.

Messrs. Wm. Wood and Co., of New York, have relinquished their Agency for the supply of THE LANCET in the United States. The Manager of THE LANCET will be pleased to supply copies direct from the London Office to subscribers in the United States at the strictly prepaid rate of $8 for twelve months. Subscriptions may commence at any time. Drafts and Money Orders should be made payable to the Manager, Mr. CHARLES GOOD, 1, Bedford-street, Strand, London, W.C. 2, England.

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ADVERTISEMENT RATES.

Books and Publications ... ... }
Official and General Announcements } Four lines and under ... ... 4s. 0d.
Trade and Miscellaneous Advertisements ... ... }

Every additional line, 9d.
Quarter Page, £2. Half a Page, £4.
Entire Page, £8.
Special terms for Position Pages.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Communications, Letters, &c., to the Editor have been received from—

A.—Capt. W. Attlee, R.A.M.C.; Messrs. Abdulla and Co., Lond.; Association for Promoting the Training and Supply of Midwives, Lond.; Air Ministry, Lond.; Prof. F. W. Andrewes, Lond.; An Estate Doctor, Malaya; Mr. R. J. Albery, Lond.; Sir Clifford Allbutt, Cambridge; Mr. E. G. B. Adams, Newbury.

B.—Dr. G. Blacker, Lond.; British Hospitals Association, Lond.; Capt. H. W. Bayly, R.A.M.C (T.), Capt. W. Langdon Brown, R.A.M.C.; Mr. W. J. Bessant; Board of Education, Lond.; Mr. E. R. Bolton, Lond.; Dr. C. H. Browning, Lond.; Dr. Winifred Buckley, M.R.C.S., Lond.; Dr. A. Bygott, Bury St. Edmunds; Messrs. A. and C. Black, Lond.; Dr. W. B. Beil, Liverpool.

C.—Dr. G. N. P. Carrell, Ilford; Capt. C. F. Coombs, R.A.M.C (T.); Dr. A. C. Coles, Bournemouth; Canadian Contingent, Director Medical Services, Lond.; Dr. Jessie Campbell, Kirkcaldy; Mr. E. Condy, Lond.; Mr. J. Cabburn, Lond.

D.—Dr. V. Dickinson, Lond.; Dr. E. Drybrough-Smith, Shebbear; Mr. S. W. Daw, Leeds; Mr. J. Dawson, Lond.

E.—Mr. G. W. Eccles, Lond.; Dr. W. J. Ettles, Lond.; Capt. J. Eason, R.A.M.C.; Capt. W. Edmond, R.A.M.C.; Eagle Star, and British Dominions Insurance Co.

F.—Dr. F. Fox, Lond.; Dr. W. M. Feldman, Lond.; Capt. P. Figdor, R.A.M.C.; Sir W. M. Fletcher, Lond.; Mr. J. Ferguson, Stirling; Dr. E. G. Fearnsides, Lond.; Margaret I. H. Ferguson, Edinburgh; Dr. R. Fenner, Lond.

G.—Capt. H. Goodale, R.A.M.C.; Capt. G. C. Gray, R.A.M.C.(T.); Dr. V. J. Glover Liverpool; Dr. J. Gairdner, Crieff; Major H. D. Gillies, R.A.M.C.

H.—Mr. R. Hopkins, Lond.; Mr. W. F. Higgins, Lond.; Mr. W. G. Huggins, Sydney; Lieut. E. Hughes, R.A.M.C.; Col. P. Hehir, I.M.S.; Major A. J. Hall, R.A.M.C.(T.); Mr. D. Houston, Dublin.

I.—I.M.I.O., Port Villez, Directeur Médical de, India Office, Lond.

J.—Mr. A. V. Johnston.

K.—Dr. A. Kidd, St. Lucia; Prof. H. R. Kenwood, C.M.G., Lond.

L.—Messrs. Lee and Febiger, Philadelphia.

M.—Mr. J. MacMunn, Lond.; Dr. A. E. Morison, Sunderland; Mr. D. McDonald, Sheffield; Capt. R. Massie, R.A.M.C.; Mr. J. Y. W. MacAlister, Lond.; Ministry of National Service, Lond.; Major H. F. Marris, R.A.M.C.; Capt. J. A. C. Macewen, R.A.M.C.(T.); Dr. J. Maughan, Lond.; Lieut.-Col. H. Mackenzie, R.A.M.C.(T.); Metropolitan Asylums Board, Lond.; Dr. J. M. Mason, Wellington; Mr. D. Murray, Edinburgh; Mrs. M. Macfie, Newcastle-on-Tyne; Ministry of Munitions of War, Special Intelligence Branch, Lond.; Dr. J. B. Mennell, Lond.

N.—New South Wales Recruiting Committee, Sydney; Capt. M. Nicoll, R.A.M.C.; *National Food Journal.*

O.—Lieut. J. D. Oliver, R.A.M.C.

P.—Mr. J. H. Parsons, Lond.; Prudential Assurance Co., Lond.; Major W. Pearson, R.A.M.C.; Sir Douglas Powell, Bart., K.C.V.O., Lond.; Mr. J. Penoyre, Lond.; Rev. Dr. Pentreath, Market Drayton.

R.—Royal College of Physicians of Ireland, Dublin, Registrar of; Dr. M. J. Rowlands, Lond.; Dr. F. Robinson, Cambridge; Registrar General, Edinburgh; Mr. H. Royle, Lond.; Registrar General, Lond.; Royal Institution of Great Britain, Lond.; Royal Statistical Society, Lond.; Royal Society, Lond.

S.—Capt. C. E. Sundell, R.A.M.C.; Mr. S. Stephenson, Lond.; Dr. G. H. Skinner, Northampton; Mr. W. J. Stevenson, Lond.; Dr. D. N. Seth-Smith, Bildeston; Dr. N. I. Spriggs, Leicester; Prof. J. W. W. Stephens, Liverpool; Dr. Halliday Sutherland; Dr. A. E. Stansfeld, Lond.

T.—Dr. A. H. Thompson, Lond.; Dr. J. Tatham, Oxted; Dr. F. W. Twort, Lond.; Capt. W. J. Tulloch, R.A.M.C.; Mr. J. Taylor.

W.—Prof. A. D. Waller, Lond.; Dr. T. J. Wood, Bradford; Dr. A. J. Whiting, Lond.; Capt. E. Wrench; Messrs. John Wright and Sons, Bristol; Mr. C. B. West, Lond.; Lieut. R. Wade.

Notes, Short Comments, and Answers to Correspondents.

COLONIAL HEALTH REPORTS.

Grenada.—The population of this colony, as estimated on Dec. 31st, 1916, was 73,056. The birth-rate for the year was 35·60 and the death-rate 17·50 per 1000. The latter is the lowest rate for the colony on record, and it varied in the different registration districts from 20·8 down to 9·7.

Excepting enteritis-diarrhœa, which exacts a great toll on infant life, malaria was the cause of the greatest number of deaths, although there were fewer fatalities from this disease (103) than in the previous year (147). The detachment of the West Indian Contingent at Quarantine Station suffered considerably from this complaint during the months of the wet season. In the Colony Hospital 1865 patients were treated during the year. In the Yaws Hospital 318 cases were treated, as against 663 during the previous year. Despite the lower number received into hospital there is no evidence, according to the Colonial Surgeon's report, that the number of cases of yaws in the district is decreasing. A hospital for consumptives, opened in 1913, provides 20 beds, and occupies a favourable site on a hill about 600 feet above sea level. Thirty-nine patients were treated during the year. A new Government Dispensary was opened at St. David's, and, with the exception of St. John's—where there is a subsidised dispensary—Government dispensaries are now established in each parish of the colony and in Carriacou. They supply medicine free of cost to certain people, and at a reduced rate of payment to the labouring class.

The operations against hookworm disease have been conducted by the International Health Board since 1914, and about half of the colony has been overtaken in that period. During the last year 7218 persons were examined, of whom 5449, or 75 per cent., were found to be infected. The cures numbered 1661, a rate of 28·6 per cent. Dr. Angus G. Macdonald, the former medical officer in charge, resigned in August, and was succeeded by Dr. Howard S. Colwell.

Improvement in sanitation, which is necessary to prevent areas from becoming reinfected, is proceeding slowly, and there are signs of reawakened interest on the part of the local sanitary authorities.

Gibraltar.—A report drawn up by the Acting Colonial Secretary, Mr. F. Evans, states that the civil population in the city and harbour in 1916 consisted of 235 Maltese, 16,264 British subjects other than Maltese, and 1947 aliens on permit—total, 18,446. There were 340 births and 325 deaths registered during the year.

The number of persons treated in the Colonial Hospital was 923 (693 males and 230 females), of whom 46 died; the out-patients numbered 8338; 325 surgical operations were performed. In the small-pox hospital 23 patients were treated. The tuberculosis dispensary is under the management of the Sanitary Commissioners. The average number of patients attending per month was 63, and an average of 45 visits a month was paid to patients in their homes. 22,166 pounds of beef and 25,480 pints of milk were distributed to patients and their families during the year. 27 adults and 20 children were accommodated in the Sanitary Commissioners' home at different periods of the year, of whom 12 (9 adults and 3 children) were suffering from tubercular disease.

Trinidad and Tobago.—According to the report on the Blue-book of this colony for the year 1916, the estimated population is 371,876. The birth-rate for the year was 32·6 and the death-rate 20·44 per 1000.

At the Colonial Hospital, Port of Spain, 4566 persons were admitted during the year and 3867 discharged; there were 637 deaths. At the San Fernando Hospital 3032 patients were admitted and 2660 discharged. There are Government District Hospitals at Tobago, Arima, St. Joseph, Tacarigua, Couva, Princes Town, and Cedro, having a total of 246 beds. Two hospitals, one in Tobago and one in Trinidad, are also kept up for the treatment of sufferers from yaws. In the Leper Asylum, situated at the village of Cocorite, about ten miles westward of Port of Spain, there were on Dec. 31st, 1916, 427 inmates, of whom 294 were males and 133 females. The number of patients admitted during the year was 226; there were 32 deaths and 114 persons were discharged as relieved. 120 patients employ themselves in gardening within the grounds of the institution, while 16 work at their trades.

"PROFESSIONAL ANECDOTES."

Dr. Charles J. Macalister, who was recently elected president of the Liverpool Medical Institution, chose for his inaugural address, which deserved the publication which it has now received, the piquant subject of personal adventures which had befallen him during long professional practice. He gives in his booklet instances of unusual gratitude or benevolence on the part of patients, narrates weird adventures with lunatics, and exposes amusing attempts to betray the medical code of honour. Interspersed with these subjects are human stories well selected. The curate's maid who, referring to her employer, said, "Mr.—— is not married, he is a chalybeate," ought to find herself much quoted in speeches at scientific functions. The address has been printed as a gift to friends, but we are sure that a wider public would appreciate it, and a further collection of such experiences, especially as Dr. Macalister says he knows many longer yarns "which might be capable of being woven into fictions founded on fact."

THE CHILDREN'S WELFARE.

AMERICA, with its uncanny sense of the value of judicious publicity, is, according to the information received by the National Sunday School Union, allotting its second year of warlike activity to a civil war against the enemies of child life. "Children's Year" in America is to begin on April 6th next, and while in this country the campaign is well in hand, we shall look anxiously to the States for hints as to direction of further energy. The appalling wastage of child life is generally admitted, though opinion is widely variant in regard to the best means of combating it. The cry for a central health department of the State is very insistent in our public press. Behind the scenes there are many who believe that quiet unostentatious work of an educative character is the chief need of the moment. Two little books which lie before us are well adapted to help this purpose. *Infant Welfare* (Schofield and Sims, Huddersfield), by Dr. Vincent J. Glover, of Liverpool, is intended for sale or distribution at schools for mothers and for use by girls in the higher classes of elementary schools. Short paragraphs lay down the things necessary for a mother to do and to leave undone if she wishes her child to be healthy—directions for feeding the baby, pitfalls to be avoided in physical training, the common enemies to child health, and so on. The scanty illustrations are telling and to the point. *The Baby* (S.P.C.K., price 9*d.*), by Dr. Sophia Seekings, one of a series of manuals of health, is presumably intended for a more thoughtful class of motner, and in the small compass of 63 pages gives an outline of what it is necessary for every woman to know in order to bring up healthy offspring. In a chapter on the child's inherent right to be well born Dr. Seekings deals with the insidious results of venereal disease, following with chapters on infant management, baby's toilet, general hygiene, and the minor ailments and accidents of childhood. The writing is clear and practical.

GAMES FOR THE MEN.

To the Editor of THE LANCET.

SIR,—Can you, even in these days, find me a corner to ask on behalf of Sir Edward Ward, Director-General of Voluntary Organisations, for gifts of games of all kinds for the men? The unlooked-for kindness shown the sweater industry by your readers during the past four years makes me bold to prefer this request.

We are constantly asked at the depôts at Havre, Basra, and elsewhere for games, and one can well believe that they add greatly to the happiness and well-being of those who do so much for us. After all, games are rather a British speciality, and probably most houses could spare one for the men; only we must remember who they are for and send, as always, our best. Here is a first list of what we want: everything used for bowls, boxing, cards, chess, cricket, croquet, draughts, football, golf, halma, "house," and similar games, hockey, quoits, and tennis; also the kit needed, especially shoes and shorts. Some of the above are, of course, for convalescents. Any addition dictated by good sense and good feeling, rather than spring cleaning, can be made to this list. Kindly enclose name and address in parcels. Address for sending: *Games* to Sir Edward Ward, D.G.V.O., 45, Horseferry-road, S.W.1. *Letters* to John Penoyre, 8, King's Bench Walk, Temple, E.C.4.

I am, Sir, yours faithfully,

March 6th, 1918. JOHN PENOYRE.

A NEW STRETCHER DRILL.

A stretcher-pole may in emergency become a useful splint. A patient with a fractured femur, though no long splint is available, may be carried on a stretcher in comfort, if his foot is secured to the end of the stretcher-pole, while a bandage sling attached to the other end makes counter extension through the perineum. But Major H. R. Allen, Medical Reserve Corps, U.S. Army, Director of the Camp Greenleaf School of Applied Surgical Mechanics, has worked out ingeniously a method of using the regulation stretcher for treating any fracture, but particularly fractures of the extremities. A full account is given in the *Military Surgeon*, Washington, U.S.A., for January, well illustrated by 20 photographs, which indicate the convenience of the method and the great assistance it will give in the evacuation of the wounded. Shortly, it may be said that the patient is always immobilised on the stretcher to which he is secured by the stretcher slings and his own belt. To take the case of a man with a broken left leg. He is turned on his left side, the stretcher placed along his back by the single orderly who has so far reached him. His ankle is secured to the foot of the left stretcher-pole by one of the slings, and the other sling, lengthened by his belt, passes through the crutch, is brought up in front of the right shoulder, made fast to the upper end of the right stretcher-pole, and drawn tight, making a counter-extension. The stretcher will now be

firmly secured against the patient's back, so the whole can be turned over without causing him pain, and thus he is by a single bearer put on the stretcher on his back, and now he can be removed. There are pictures of a single orderly carrying a stretcher and patient on his back and shoulders; a patient carried head down; two patients, one on each side of a single stretcher—these are *tours de force*, but this method of Major Allen's appears to be well devised and should materially facilitate the comfortable removal of wounded from the battlefield. Anyone who glances at the pictures will see how easily and effectively the system is applied.

A FRUITFUL ALMANACK.

THE Red Cross have received a cheque for £1000 from Messrs. Abdulla and Co., the well-known cigarette specialists, which sum was the proceeds of the sale of the Abdulla Almanack for 1918—an interesting production, as it was illustrated by the best-known artists of the day.

THE GIRL DISPENSER.

AN unusual case came before the Brighton justices on Feb. 22nd, when Florence Smith, aged 16, appeared to answer two summonses for supplying opium and cocaine to unauthorised persons. A Canadian soldier called at the shop where the girl was employed and endeavoured to obtain the drugs. He had been in the shop before and asked for drugs but had not been supplied; but when he sent a letter the girl acceded to his request and sent him cocaine and opium. The parcel was directed to another soldier, who forwarded it on to the Canadian in question, and the latter sent money for it. The girl's employer knew nothing at all about the sale. The girl pleaded guilty, and on her behalf the justices were asked to look upon the offences as the act of quite a child who fell an innocent victim to a piteous appeal from a soldier who "would die if he did not get some stuff." In mulcting the girl in a penalty of 10s. on each summons the chairman of the bench said she had acted foolishly and expressed the opinion that poisons should be under the care of the employer and not exposed to the care of young girls.

SEX-LIMITED MEDICAL APPOINTMENTS.

A CORRESPONDENT writes in some distress with regard to the unfairness of allotting child-welfare appointments under the public health authority exclusively to women and of making these appointments permanent at a time when men are practically debarred by military service from applying even if they are eligible. He suggests that men should be granted their legitimate share in these new appointments and that elementary justice dictates that all such appointments should be (1) equally open to men and women; (2) separated from the M.O.H. appointments; and (3) of an interim nature till the war is over. We are inclined to agree with our correspondent that posts relating to infant welfare work should be open and allotted to the most suitable applicant, whether male or female. Maleness should not debar from any branch of pediatry, and fathercraft should not be forgotten in the modern emphasis on mothercraft. But we do not know whether our correspondent is prepared to go as far as to admit that femaleness should not as such debar from any position in the public health service. We look to the solution as regards child-welfare in the allocation to general practitioners with special training and experience of part-time public welfare appointments. The menace of any further separation between remedial and preventive medicine will thus be best avoided.

"ANIMAL LIFE AND HUMAN PROGRESS."

THE sixth lecture of the series was delivered on March 6th at King's College, London, by Dr. R. T. Leiper, reader in helminthology in the University of London, who took for his subject Some of the Inhabitants of Man and their Migrations. The lecture was illustrated by lantern slides, and was a lucid exposition of what we owe to medical investigation aided by zoological study in making tropical countries more habitable to the white man. That worms inhabited the human body was well known to the ancients, said the lecturer, who were also familiar with the diseases caused by the parasites. The Ebers Papyrus mentions *uha*, which is now believed to be identical with hook-worm disease, while what we term bilharziosis was also known to the Egyptians. Guinea-worm disease was detected by the ancient men of learning, as were tape-worms and hydatids. Elephantiasis was recognised by early physicians, though it was not distinguished from leprosy until 1037 A.D. At the present day some 80 well-defined species of worms are known to live within the body. Limiting his remarks to the parasites which had been known for hundreds of years Dr. Leiper passed in review the work done in investigating their life-histories, which he said had been obtained for the most part by experiments on the lower animals, the results being the foundation of the laws which now govern meat inspection. Incidentally he remarked that the guinea-worm could probably be identified with the fiery serpents which afflicted the children of Israel in the desert, and showed on the screen an old seventeenth-century print depicting the treatment of guinea-worm disease by drawing out the worm and winding it round a stick, just as an African native does now. Dealing with elephantiasis he alluded to the important work done by Sir Patrick Manson on the cause and spread of the disease, describing the hookworm which counts its victims in America by thousands, and towards the investigation of which Mr. Rockefeller some years ago gave an incredibly colossal sum. The lecturer then described the flukes and the bilharzia. Sir Patrick Manson, who presided, said that not many years ago the subject of helminthology was despised by medical men, but owing to the work of Dr. Leiper and others it had become one of the really important branches of medicine. It was impossible to disregard the worm in tropical medicine, and the more tropical countries were inhabited by Europeans the more important the worm would become.

On March 20th Professor W. A. Herdman, F.R.S., will lecture at 5.30 P.M. on Our Food from the Sea.

PERMITS FOR BISMUTH.

BY an Order issued on March 12th merchants and others dealing in bismuth minerals must notify their stocks if they exceed certain specified amounts to the Controller of Non-Ferrous Materials Supply within 15 days of the date of issue of the Order. The Minister of Munitions permits, however, until further notice any person to purchase bismuth metal and bismuth salts not exceeding in any one calendar month in the case of bismuth metal a total quantity of 10 lb. and in the case of bismuth salts a total quantity of 56 lb., provided that the same are purchased, and in fact used, for pharmaceutical or medicinal purposes only.

SUDDEN DEATH IN A DENTAL SURGERY.

AT an inquest held in Belfast recently the jury found that a woman aged 34 met her death from asphyxia, due to cocaine poisoning, administered by an unregistered dentist. From the evidence it appeared that when the last of the teeth was pulled, the deceased fell forward as if in a faint, and when Dr. N. McConnell was summoned she had succumbed, despite which he tried artificial respiration in vain for half an hour. She had been previously injected with cocaine manufactured for the Medical Supply Association, and marked (as produced at the inquest) "A safe and reliable preparation." Professor St. Clair Symmers, on being examined, said the woman was in a state of suffocation; and if, as stated, she had been injected with cocaine, he said he could only attribute death to the result of that injection. She was the subject of lymphatism, a condition no medical man could diagnose while the patient was alive, and people in that state were peculiarly susceptible to the injection detailed, and in such cases death occurred suddenly.

AN EXPENSIVE BEVERAGE.

MILK is now an expensive beverage for adults. A Cricklewood dairyman and his assistant were recently fined 5s. each for serving a glass of milk to a customer, who had in his turn to pay 5s. for receiving it. In a later case at the same court fines were levied in pounds instead of shillings for the same offence; and a lady at Brighton is reported to have been fined £20 for obtaining a large amount of cream on a doctor's certificate and using it for the delectation of a supper party.

PRUDENTIAL ASSURANCE COMPANY, LIMITED.

THE sixty-ninth annual report of this company for the year ending Dec. 31st, 1917, shows that the assets for the year in all branches were £107,283,371, which, after a deduction of a balance of £3,487,500 owing in respect of an advance from the bankers for purchase of War Loan, indicates an increase of £4,672,125 over 1916. In the ordinary branch the number of policies issued during the year was 56,502, the premiums received being £5,495,205. The claims amounted to £4,852,409, of which £398,385 were in respect of war claims. The number of deaths was 14,629. The claims of the year in the industrial branch were £4,352,031, of which £1,109,240 were in respect of 65,665 war claims, the total number of claims and surrenders, including 22,078 endowment assurances matured, being 402,635. The total number of policies in force in the same branch was 21,730,468, with an average duration of over 13½ years. The war claims of the year in both branches were 70,488 and amounted to £1,507,625, the total paid up to the present on this account since the outbreak of the war exceeding £3,400,000 in respect of over 160,000 claims. Under the sickness insurance tables in the general branch the premiums received during the year amounted to £6721, and £3744 were paid in sickness claims.